

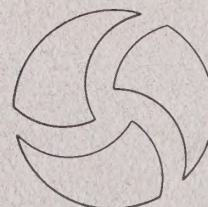
Integrated Solid Waste Management System for Los Angeles County

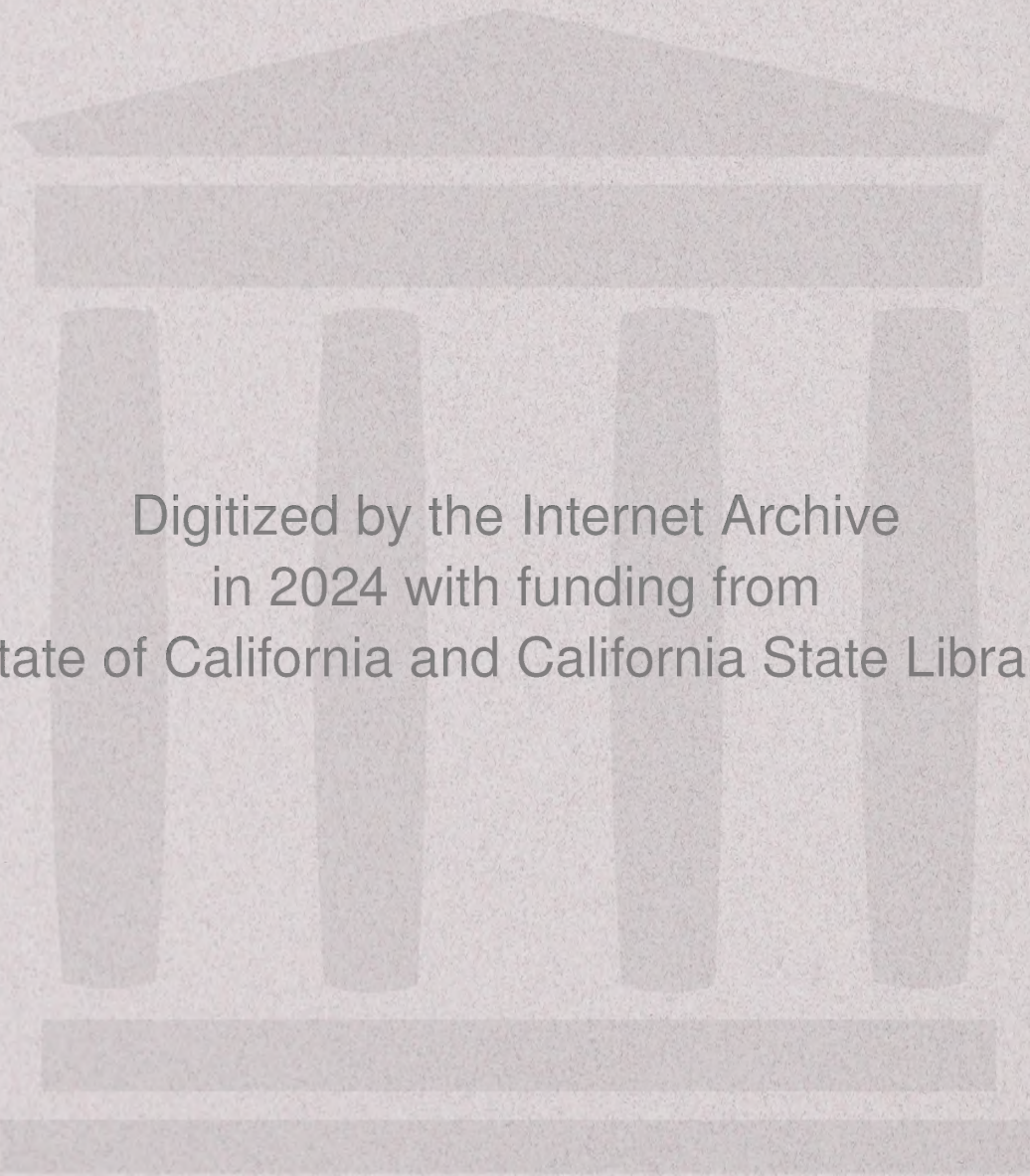
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August 1990

Integrated Solid Waste Management System for Los Angeles County

Lead Agency — Co-Sponsor
Sanitation Districts of Los Angeles County
Solid Waste Management Department

Co-Sponsor
County of Los Angeles
Department of Public Works

Draft Program Environmental Impact Report



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CHAPTER 1

Summary

CHAPTER 1

SUMMARY

This Program Environmental Impact Report (EIR) evaluates the environmental effects of a regional integrated solid waste management system which must be implemented in order to avert the impending disposal crisis in Los Angeles County. An "integrated" waste management system is one which minimizes land disposal of solid waste through aggressive waste diversion programs but provides adequate capacity to ensure that disposal of remaining wastes can be accomplished in a safe, environmentally sound manner. The primary components of the Integrated System include waste diversion (e.g., source reduction, recycling and reuse) programs, the expansion of existing landfills and siting new landfills when environmentally feasible. A Program EIR is the appropriate type of environmental documentation when a series of actions that are related geographically and will have similar environmental effects that can be mitigated in similar ways are considered for implementation, such as the components comprising the Integrated System. The scope of the report consists of regional and local environmental impact analyses of each component. Local impacts are those occurring at or near the location of a waste diversion facility or disposal facility. The evaluation is presented in the greatest detail practicable; however, where necessary, some of the impact discussion is generic in nature. It is intended that the evaluation of the potential new sites is presented in sufficient detail in this document to initiate the permitting process of one or more of these facilities.

The purpose of this chapter is to provide a clear and concise overview of the Program EIR content. For a complete discussion of a specified topic, appropriate sections in the main report should be reviewed.

1.1 PROGRAM BACKGROUND

In February 1988, a study entitled Solid Waste Management Status and Disposal Options in Los Angeles County was completed by the solid waste staffs of the County Department of Public Works (County), the City of Los Angeles Bureau of Sanitation and the Sanitation Districts of Los Angeles County (Sanitation Districts). The report evaluated the existing complex waste management system which involves public and private refuse collection, transfer and disposal services. Existing solid

waste facilities are shown on Figures 1-1 and 1-2. Furthermore, the study indicated that a disposal shortfall would occur by 1992 unless waste diversion activity is increased, existing landfills are expanded, or new landfills are sited. A more recent, updated analysis, shown on Figure 1-3, was performed which compared projected waste generation rates with estimated current levels of waste diversion (recycling) and existing permitted landfill capacity. Again, consistent with the earlier report, the projected disposal shortfall of the existing solid waste management system still remains but could occur as early as 1991. In late 1987, a preliminary study was prepared by the County and the Sanitation Districts which assessed 101 potential new landfill sites according to a comprehensive set of technical, environmental, and social criteria. The six highest ranking sites identified (in alphabetical order) in the preliminary study were Blind Canyon, Browns Canyon, Elsmere Canyon, Mission-Rustic-Sullivan Canyons, Towsley Canyon, and Toyon Canyon II. A detailed environmental evaluation of the potential Blind, Mission-Rustic-Sullivan, and Towsley Canyon sites is presented in this report. Elsmere Canyon is being pursued by the private proponent and an EIR/EIS is being prepared under the direction of the County and the United States Forest Service. During the preparation of the Program EIR, Browns Canyon and Toyon Canyon II were dropped from further consideration due to problematic geological conditions.

In response to the information developed in the above-referenced reports, a coordinated Solid Waste Management Action Plan (Action Plan) was formally approved by the County Board of Supervisors (April 1988) and the Sanitation Districts Board of Directors signatory to the Joint Refuse Transfer and Disposal System Agreement (May and June 1988). The Action Plan is a clear public policy directive which includes support for aggressive waste diversion programs as well as the pursuit of 50 years of permitted in-county disposal capacity in public ownership. These activities are best implemented within the context of the regional integrated waste management system proposed in this report.

The integrated system approach is consistent with the California Integrated Solid Waste Management Act (AB 939) which became law January 1, 1990, and established state-mandated local integrated waste management planning. This law requires that each city and county prepare a source reduction and recycling element of a County Integrated Waste Management Plan, documenting the ability to achieve specified waste diversion goals of 25 percent by the year 1995 and 50 percent by the year 2000. In addition, each county is required to develop a siting element to provide for the long-term disposal of wastes which cannot be diverted.

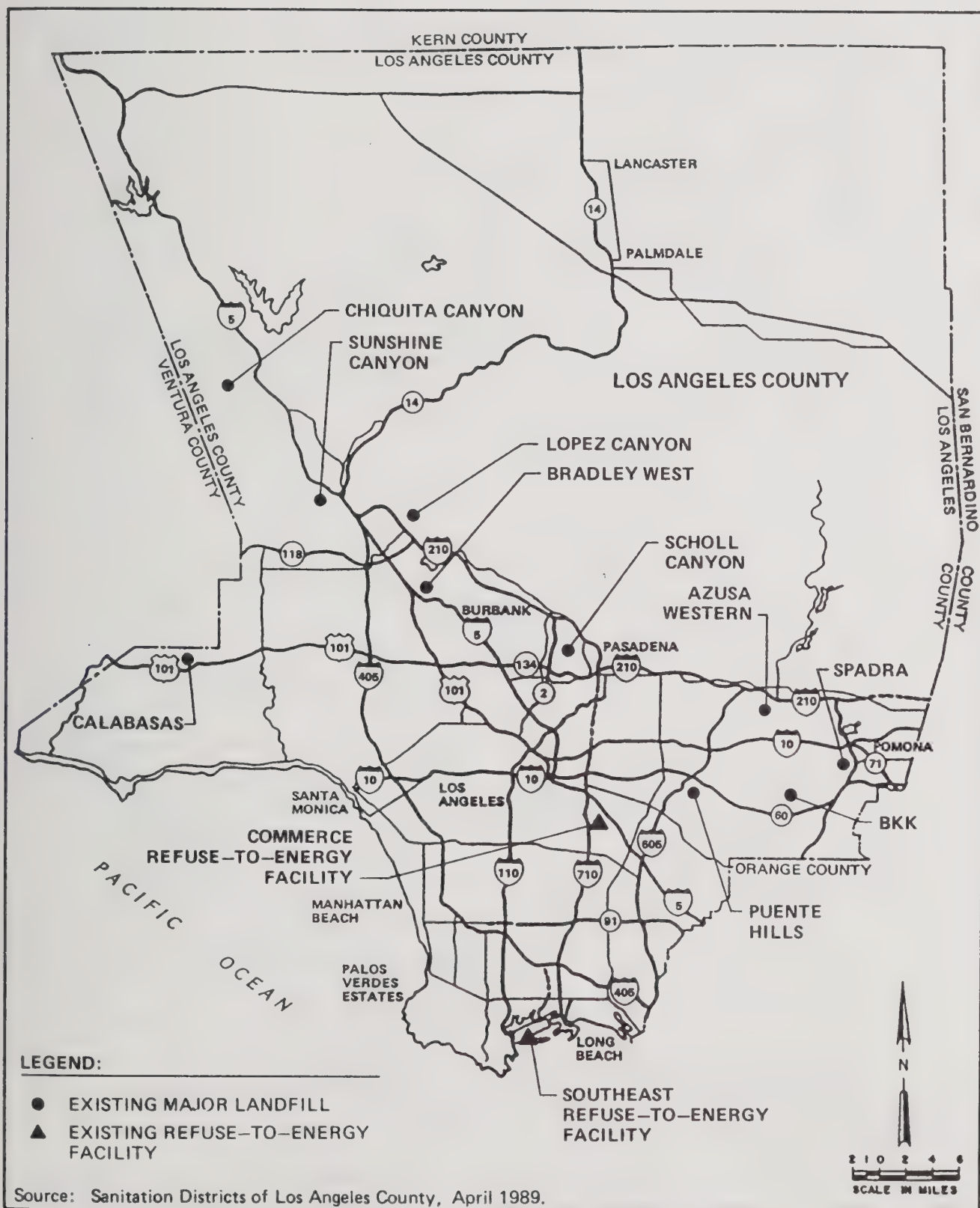


Figure 1-1 Locations of the Ten Major Los Angeles Metropolitan Area Landfills and Refuse-to-Energy Facilities

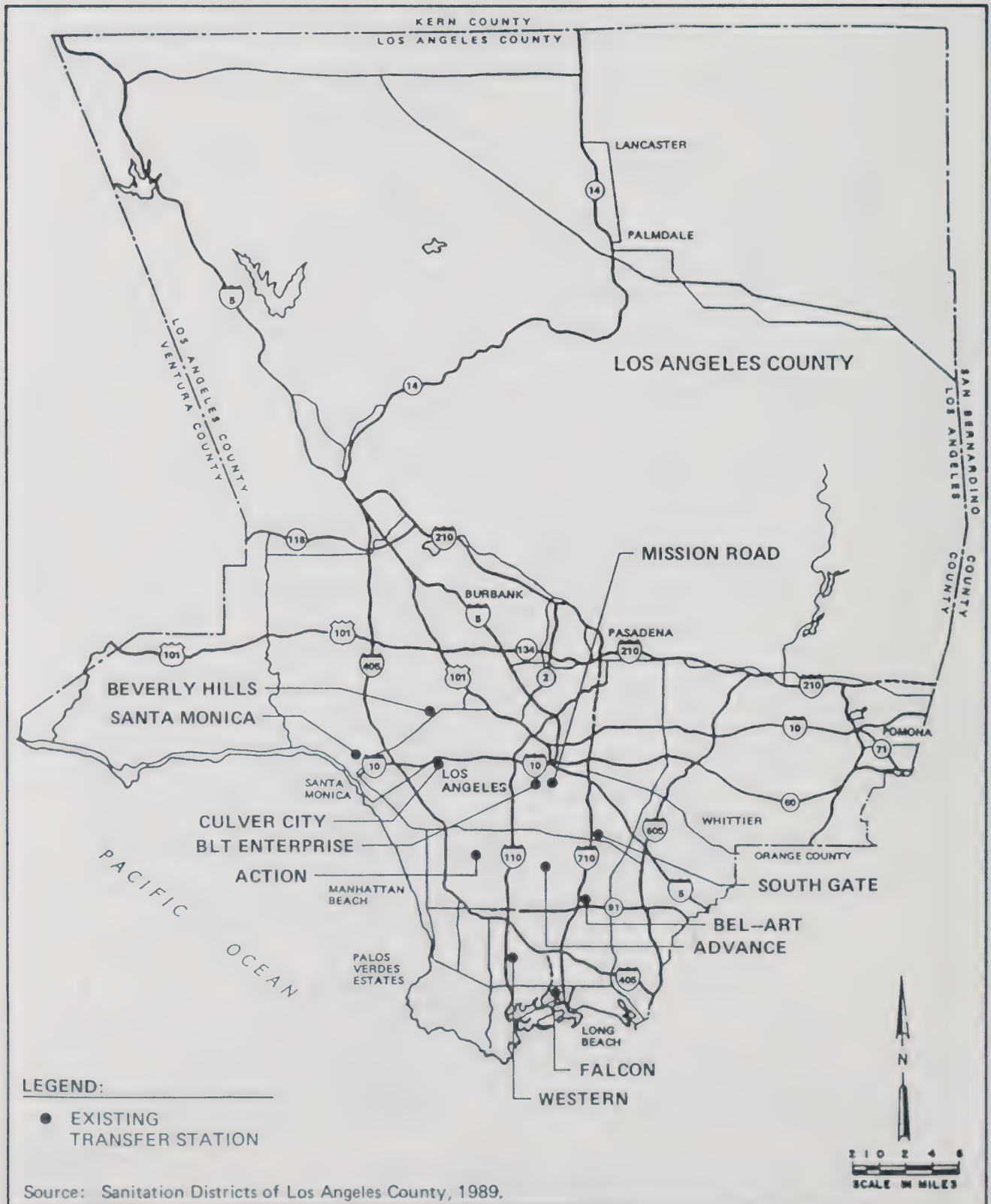
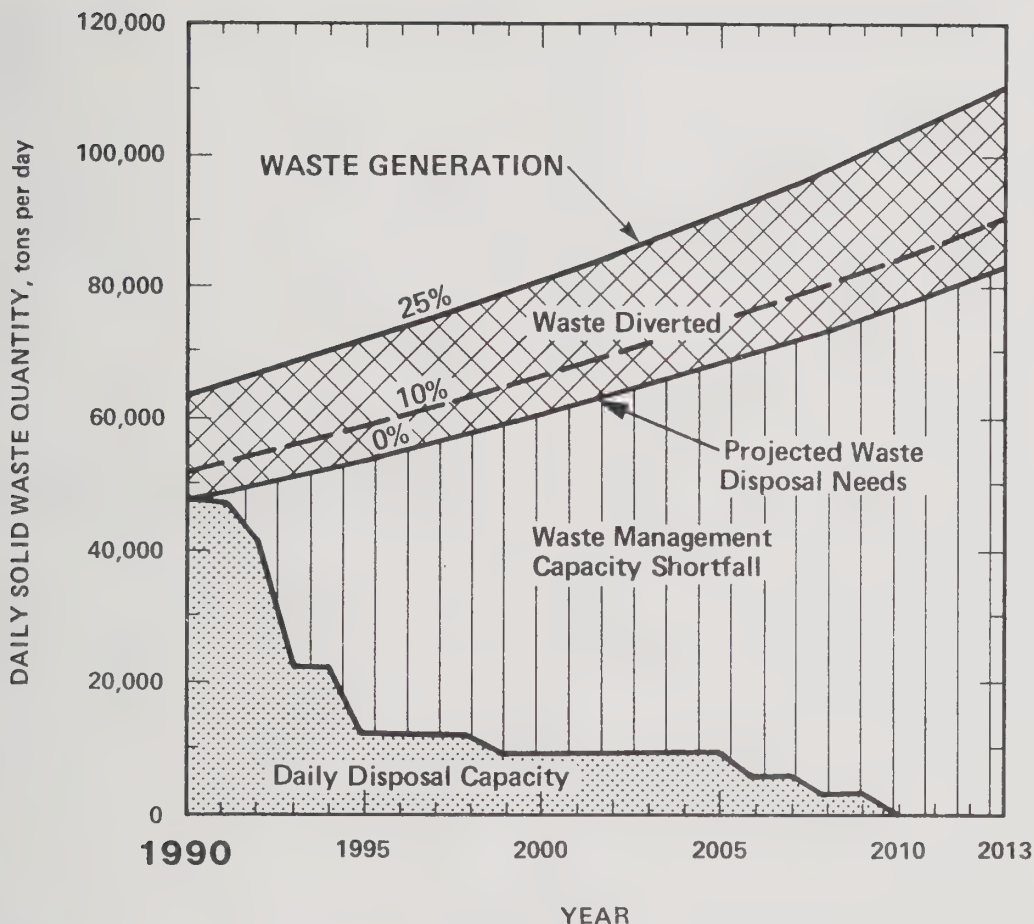


Figure 1-2 Locations of Existing Transfer Stations



NOTES:

1. **WASTE GENERATION RATE:** THE SUM OF THE AMOUNT OF WASTE DIVERSION AND THE AMOUNT OF WASTE REQUIRING DISPOSAL. WASTE GENERATION IS ASSUMED TO INCREASE AT A RATE OF 1% PER YEAR DUE TO POPULATION GROWTH AND 1.5% PER YEAR DUE TO PER CAPITA INCREASES.
2. **WASTE DIVERTED:** THE QUANTITY OF WASTE GENERATION WHICH IS PROJECTED TO BE DIVERTED THROUGH RECYCLING AND REUSE EFFORTS. THE EXISTING LEVEL OF WASTE DIVERSION IS ESTIMATED TO BE BETWEEN 10 AND 25 PERCENT.
3. **WASTE MANAGEMENT CAPACITY SHORTFALL:** THE DIFFERENCE BETWEEN THE QUANTITY IN NEED OF DISPOSAL AND THE AMOUNT OF DAILY CAPACITY.
4. **DAILY DISPOSAL CAPACITY:** THE AMOUNT OF CAPACITY AVAILABLE AT THE 10 MAJOR CLASS III LANDFILL SITES IN L.A. COUNTY
5. **1990:** THE LAST YEAR THAT THE DAILY DISPOSAL NEEDS OF THE METROPOLITAN AREA CAN BE MET, ASSUMING NO INCREASES IN EXISTING RECYCLING LEVELS, NO EXPANSION OF EXISTING SITES, OR NO NEW SITES.

Source: Sanitation Districts, 1990.

Figure 1-3 Time-to-Crisis Analysis

This Program EIR provides information upon which the public and responsible agencies may comment. A 60-day review period has been established for the submittal of written comments during which public hearings will be held as well. Comments received at the hearings and in writing will be responded to and incorporated into a Final Program EIR. The Final Program EIR will be the basis for subsequent decisions on Action Plan programs and projects, including the possible implementation of new landfill capacity. The report will also provide a regional framework for city and county planning efforts, and for considering subsequent implementation of other independent solid waste management projects.

1.2 PROGRAM DESCRIPTION

As stated earlier, the proposed integrated waste management system includes waste diversion from landfills through source reduction, recycling and reuse; the expansion of existing landfill sites where appropriate; and the siting of new landfills in order to prevent a projected waste management capacity shortfall. Taking into account the AB 939 diversion goals, the metropolitan area of the County will require approximately 650 million tons of disposal capacity over the next 50 years in order to meet the objectives of the Action Plan. Each of these components is discussed briefly below.

1.2.1 Waste Diversion

Responsibility for implementation of the waste diversion component of the Integrated System lies not only with the County and the Sanitation Districts, but also with state and local governments, the collection industry, as well as with each individual resident and business in the County. The Program EIR presents a menu of waste diversion programs which could be implemented towards meeting the goals of AB 939. The Sanitation Districts are currently assisting cities' planning efforts to comply with AB 939 through the organization of regional groupings of cities to cooperatively prepare source reduction and recycling elements. The Sanitation Districts are also committing up to \$1,000,000 to support the AB 939 planning efforts of the regional groupings of cities. Diversion rates, for compliance with AB 939, will be defined as the sum of the existing level of diversion and the increase in diversion achieved by the target year. Based upon a preliminary evaluation by the County Department of Public Works and the City of Los Angeles Bureau of Sanitation, it is estimated that the current level of waste diversion in Los Angeles County is approximately 10 to 25 percent. In order to reach AB 939 waste diversion goals, it will be necessary to divert material

presently going to landfills. The following discussion presents programs, categorized by waste source, which could be implemented to further these efforts.

Residential Waste Stream

Consumer awareness and education programs addressing techniques such as the purchase of products in reusable, recyclable or recycled containers and, in turn, encouraging manufacturers to produce this type of packaging, is of primary importance for achieving source reduction of residential waste. Implementation by cities of a "per container" collection fee (the more waste put out for disposal, the higher the fee) also encourages residents to reduce waste requiring disposal. A combination of buy-back centers, drop-off centers, and mandatory curbside collection allows for optimal material recovery from the residential waste stream. Presently, approximately 30 out of 88 cities in the County have pilot- or full-scale curbside recycling programs for single-family houses. In addition, the County Department of Public Works has implemented residential curbside recycling programs for single-family homes in several unincorporated areas and plans to extend these programs to all unincorporated areas of the County. Yard and garden wastes, or "green waste," can be diverted through separate residential collection and can either be shredded and used to replace soil in meeting a portion of the daily cover requirement at landfills, as is currently being done at Sanitation Districts-operated sites and soon at a fourth, or composted for use as mulch, preferably at local community facilities.

Commercial/Industrial Waste Stream

In addition to helping reduce the residential waste stream, manufacturers, through the design of products which can be recycled or made from recyclable materials, can affect source reduction in the commercial/ industrial waste stream. Legislation will play an important role through such measures as procurement requirements and tax credits associated with recycling activities. Examples of possible programs which can recover materials from the commercial waste stream would include office paper recycling programs, or cardboard and glass recycling programs at restaurants or grocery markets. Although not as efficient as source separation programs, recyclables can be recovered from a mixed commercial/industrial waste stream at a materials processing facility, which employs both manual and mechanical separation methods. To further assess the feasibility of processing mixed waste versus selected loads (with a high percentage of recyclables), the Sanitation

Districts are proposing to construct and operate a research and demonstration materials recovery facility (MRF) with a capacity of approximately 600 tons per day.

Construction/Demolition Waste Stream

Source reduction is also needed for the construction/demolition waste stream. An effective way of recovering materials already in this waste stream is through recovery at landfills. A number of materials, such as asphalt, dirt, and wood, often arrive at the site in relatively pure loads and therefore can easily be diverted from the disposal area. The materials are then either processed for reuse on site, as is asphalt and dirt, or hauled off site for possible use in energy recovery facilities outside the air basin, as is the potential for wood.

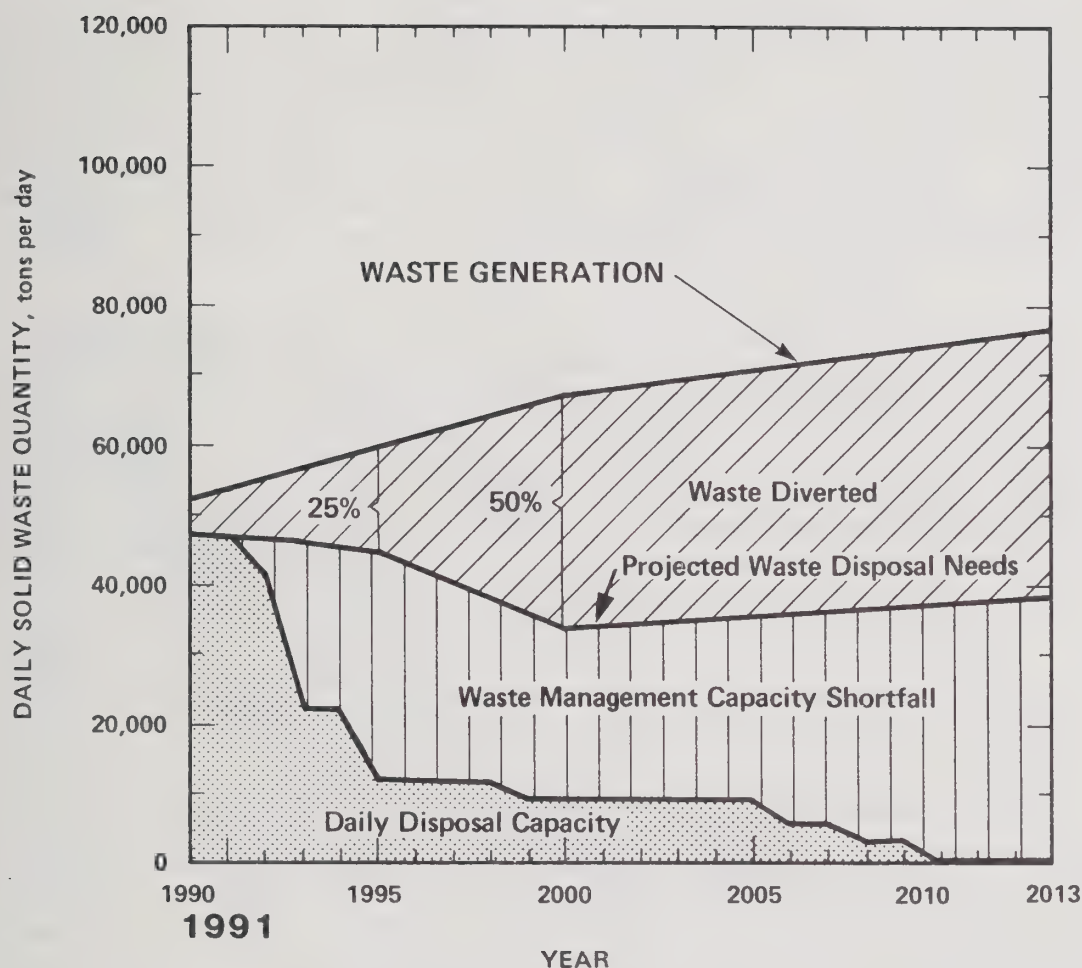
Impact of Waste Diversion on Disposal Crisis

Although neither the methods nor the markets for materials have been identified to date for fully complying with the year 2000 AB 939 goals, Figure 1-4 shows the effect that the very aggressive and optimistic waste diversion efforts required by AB 939 will have on the solid waste management needs of the County, assuming a low end existing diversion rate of 10 percent. This assumption results in the greatest increase in waste diversion necessary to achieve AB 939 goals and the minimum additional capacity required to prevent a shortfall. As shown, even these substantial efforts will not be adequate to significantly delay the capacity shortfall due to imminent closure of existing sites.

Figure 1-4 also shows that the metropolitan area can greatly diminish reliance upon landfills by the year 2000 if AB 939 goals can be achieved. For the purpose of this report, it is assumed that AB 939 goals are met. However, if AB 939 goals are not met, over 30,000 tons per day of daily landfill disposal capacity would be required. The time-to-crisis analysis shows that, while reliance upon landfill disposal will be diminished, it cannot be eliminated. Furthermore, because of the potential immediate and serious impacts resulting from a disposal capacity shortfall, the provision for adequate long-term disposal capacity is critical.

1.2.2 Expansion of Existing Landfills Component of Integrated System

Expansion and permit renewal of existing landfills is the second component of the Integrated System. As used in this report, expansion of existing sites means the continued operation at levels not higher than the existing or historical rate



NOTES:

1. **WASTE GENERATION RATE:** THE SUM OF THE AMOUNT OF WASTE DIVERSION AND THE AMOUNT OF WASTE REQUIRING DISPOSAL. WASTE GENERATION IS ASSUMED TO INCREASE AT A RATE OF 1% PER YEAR DUE TO POPULATION GROWTH AND 1.5% PER YEAR DUE TO PER CAPITA INCREASES, TO THE YEAR 2000. AFTER THE YEAR 2000, IT IS ASSUMED THAT NO PER CAPITA INCREASES IN WASTE GENERATION OCCUR DUE TO SOURCE REDUCTION EFFORTS RESULTING FROM AB 939 PROGRAMS.
2. **WASTE DIVERTED:** THE QUANTITY OF WASTE GENERATION WHICH IS PROJECTED TO BE DIVERTED THROUGH RECYCLING AND REUSE EFFORTS. FOR THE PURPOSES OF THIS ANALYSIS THE EXISTING LEVEL OF WASTE DIVERSION IS ESTIMATED TO BE 10 PERCENT.
3. **WASTE MANAGEMENT CAPACITY SHORTFALL:** THE DIFFERENCE BETWEEN THE QUANTITY IN NEED OF DISPOSAL AND THE AMOUNT OF DAILY CAPACITY.
4. **DAILY DISPOSAL CAPACITY:** THE AMOUNT OF CAPACITY AVAILABLE AT THE 10 MAJOR CLASS III LANDFILL SITES IN L.A. COUNTY
5. **1991:** THE LAST YEAR THAT THE DAILY DISPOSAL NEEDS OF THE METROPOLITAN AREA CAN BE MET, ASSUMING NO INCREASES IN EXISTING RECYCLING LEVELS, NO EXPANSION OF EXISTING SITES, OR NO NEW SITES.

Source: Sanitation Districts, 1990.

Figure 1-4 Effect of AB 939 Waste Diversion Goals on Time-to-Crisis Analysis

of disposal either over previously filled areas or adjacent new areas. There are seven major Class III landfills in Los Angeles County which are capable of undergoing expansion. The detailed site-specific environmental analyses for these landfill expansions are not within the scope of this report. This section identifies the solid waste management role played by those sites capable of expansion and outlines the status of these expansions.

Figure 1-5 shows the location of the seven major Class III landfills that have the potential to be repermited and expanded. These include the Puente Hills and Scholl Canyon Landfills, operated by the Sanitation Districts; Lopez Canyon Landfill operated by the City of Los Angeles; Bradley West Landfill, operated by Waste Management, Inc.; Azusa Western and Sunshine Canyon Landfills operated by Browning Ferris Industries; and Chiquita Canyon Landfill, operated by Laidlaw Waste Systems. As indicated in Table 1-1, these landfills currently receive about 34,000 tons per day of municipal solid waste. Table 1-1 summarizes the status of the landfill expansion and permit renewal projects. With the exception of Azusa Western and Scholl Canyon Landfills, all of these existing landfills will require permit renewals prior to 1995. It is extremely important to realize that daily disposal capacity at these, as well as at the remaining permitted sites, is limited due to permit restrictions and operational constraints. The anticipated ability of all of the expansions to abate the disposal shortfall, taking into account permit limitations, ultimate site capacities, and operational constraints, is shown on Figure 1-6. As depicted, even with aggressive waste diversion efforts and all of the site expansions, a shortfall would occur after the year 2001. Total expansion capacity would be approximately 360 million tons. Of this total, 103 million tons would be in public ownership. Therefore, in terms of meeting the Action Plan goal of 650 million tons in public ownership, an additional 547 million tons would need to be provided through new landfill capacity. Given the fact that developing a new landfill will take from 5 to 7 years, and that uncertainty exists as to what extent potential expansions will ultimately be approved, additional new landfill capacity must be pursued now.

It is also clear, however, that several of these expansions are absolutely necessary, at least in the short term, if a disposal crisis is to be averted. Between now and 1995, the earliest a new site is projected to be available, expansions of existing sites are the only feasible method of averting a shortfall.

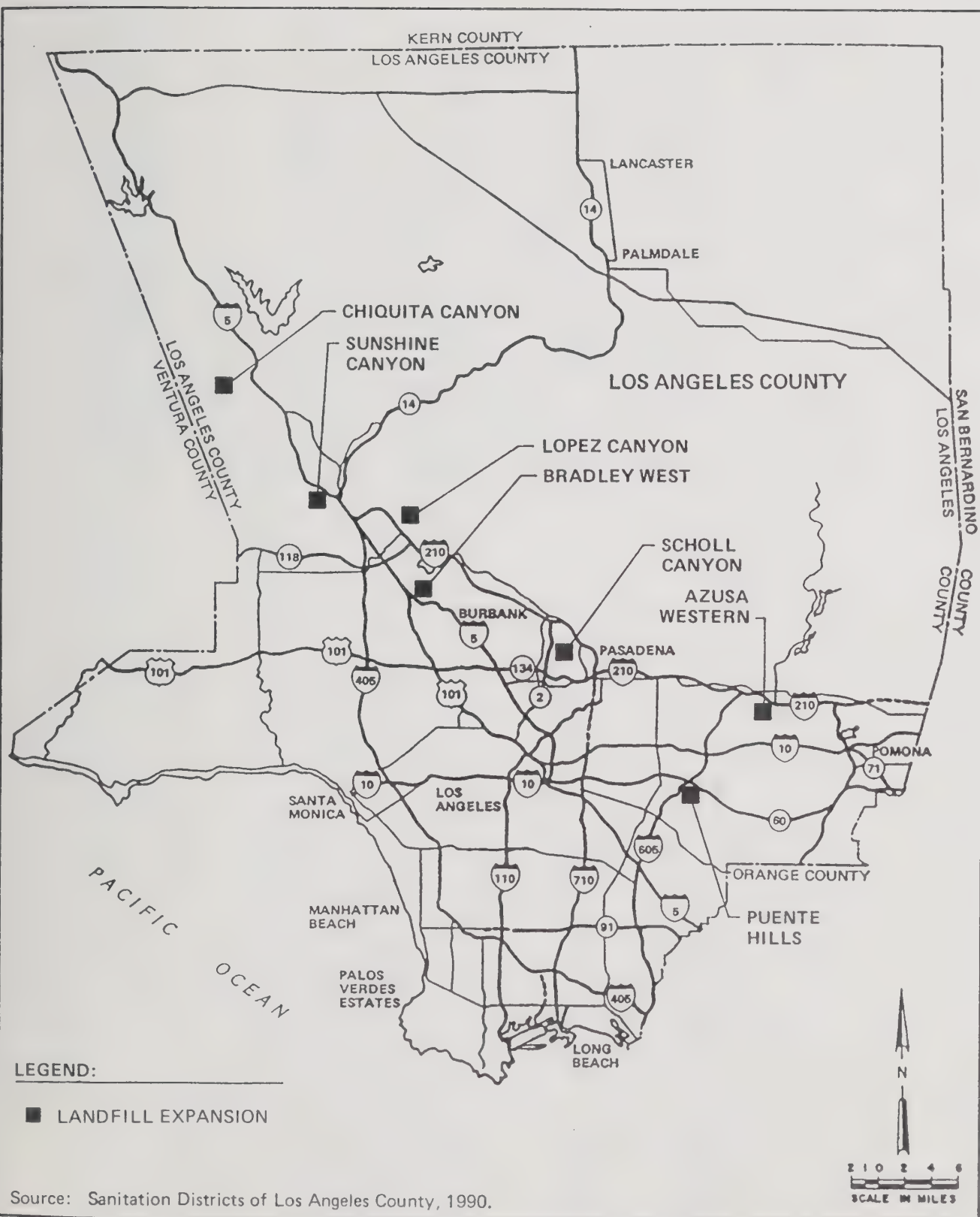


Figure 1-5 Location of Landfill Expansion Projects

Table 1-1 Status of Landfill Expansion Projects

Site	Owner/operator	Current waste flow, TPD	Approximate closure date	Expansion status
Azusa Western	Browning Ferris Industries (BFI) ^f	3,000 - 6,500	2017	Permit renewal obtained from the City of Azusa for 37 million tons in late 1989. Approximately 4 million tons of expansion capacity remains after the 37 million tons is exhausted.
Bradley West	Waste Management, Inc. ^a	3,000 - 7,000	1993	Permit renewal. Eleven million tons approved capacity approved capacity remaining. Existing permit must be renewed in 1993. Estimated closure date is 2003. Site capacity will then be exhausted.
Chiquita Canyon	Laidlaw Waste Systems ^c	3,000 - 6,000	1991 to 1992	Proposed expansion of 30 million tons. EIR being prepared. Estimated closure date would be 2002 to 2004.
Lopez Canyon	City of Los Angeles ^d	3,000 - 4,000	1990	Proposed expansion of 22 million tons with an estimated life to 2005. Draft EIR submitted 11/88. Conflict with the CIWMB over present operation may restrict waste inflow. Final EIR under review.
Puente Hills	Sanitation Districts ^e	12,000	1993	16 million ton capacity remains. Upcoming expansion proposal of 75 million tons with an estimated closure date of 2013.
Scholl Canyon	Sanitation Districts ^e	2,500 - 3,500	2004	Future expansion for additional 6 million ton capacity. Estimated closure date would be 2011-2012.

Table 1-1 Status of Landfill Expansion Projects (continued)

Site	Owner/operator	Current waste flow, TPD	Approximate closure date	Expansion status
Sunshine Canyon	BFI ^g	4,000 - 8,000	1991	6 million ton capacity remains. Proposed expansion of 215 million tons (12,000 to 14,000 TPD). Estimated closure date would be 2040. EIR process ongoing.

^aSite permitted to receive up to 7,000 TPD, but waste flow is restricted due to liner installation. Installation expected to be completed in 9/90. WMI will then decide what waste flow to take.

^bSource: Mr. Greg Loughnane, WMI, July 26, 1989.

^cSource: Mr. Sam Sambo and Mr. Frank Nicherbacker, Laidlaw Waste Systems; and Mr. Rod Welder, EMCON, July 24 to August 4, 1989.

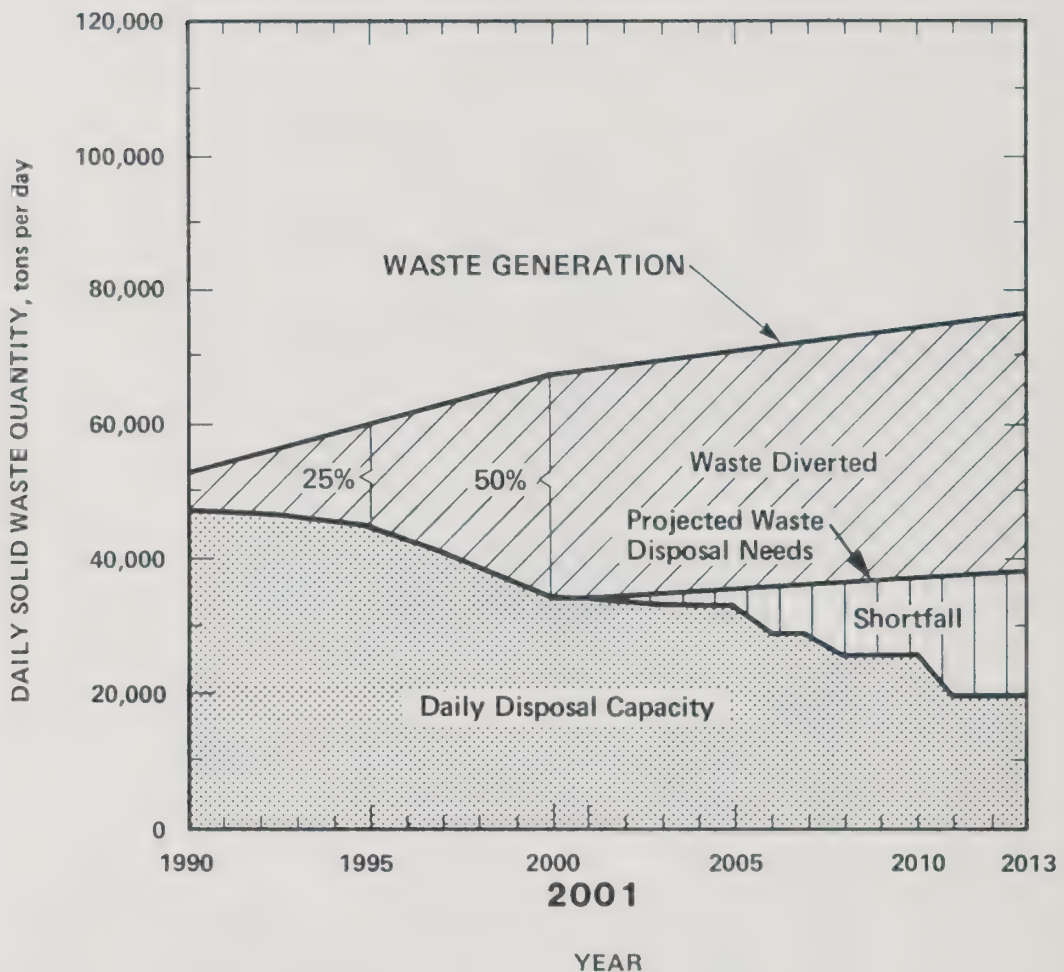
^dSource: Mr. Jeff Dubrowski, City of Los Angeles, July 24 to August 1, 1989.

^eSource: Sanitation Districts, July 25, 1989.

^fSource: Mr. Rick Spencer, BFI, July 25, 1989 and Ms. Cristian Brame, June 12, 1990.

^gSource: Mr. Dean Wise, BFI, July 25, 1989.

^hSolid waste from the City of Los Angeles is restricted.



NOTES:

1. **WASTE GENERATION RATE:** THE SUM OF THE AMOUNT OF WASTE DIVERSION AND THE AMOUNT OF WASTE REQUIRING DISPOSAL. WASTE GENERATION IS ASSUMED TO INCREASE AT A RATE OF 1% PER YEAR DUE TO POPULATION GROWTH AND 1.5% PER YEAR DUE TO PER CAPITA INCREASES, TO THE YEAR 2000. AFTER THE YEAR 2000, IT IS ASSUMED THAT NO PER CAPITA INCREASES IN WASTE GENERATION OCCUR DUE TO SOURCE REDUCTION EFFORTS RESULTING FROM AB 939 PROGRAMS.
2. **WASTE DIVERTED:** THE QUANTITY OF WASTE GENERATION WHICH IS PROJECTED TO BE DIVERTED THROUGH RECYCLING AND REUSE EFFORTS. FOR THE PURPOSES OF THIS ANALYSIS THE EXISTING LEVEL OF WASTE DIVERSION IS ESTIMATED TO BE 10 PERCENT.
3. **WASTE MANAGEMENT CAPACITY SHORTFALL:** THE DIFFERENCE BETWEEN THE QUANTITY IN NEED OF DISPOSAL AND THE AMOUNT OF DAILY CAPACITY
4. **DAILY DISPOSAL CAPACITY:** THE AMOUNT OF CAPACITY AVAILABLE AT THE 10 MAJOR CLASS III LANDFILL SITES IN L.A. COUNTY
5. **2001:** THE LAST YEAR THAT THE DAILY DISPOSAL NEEDS OF THE METROPOLITAN AREA CAN BE MET, ASSUMING NO INCREASES IN EXISTING RECYCLING LEVELS, NO EXPANSION OF EXISTING SITES, OR NO NEW SITES.

Source: Sanitation Districts, 1990.

Figure 1-6 Effect of AB 939 Waste Diversion Goals and Site Expansions on Time-to-Crisis Analysis

1.2.3 New Landfill Capacity

The third component of the Integrated Waste Management System is requisite new landfill capacity within the metropolitan area of Los Angeles County. The option of using out-of-county landfill capacity through a waste-by-rail system is discussed in the Alternatives chapter. The number and daily capacity of new sites needed to avert the disposal crisis depends upon actual levels of waste diversion achieved as well as the extent of expansions of existing sites. Due to the long lead time of 5 to 7 years required to implement a new landfill, it is impractical and would be an irresponsible public policy to await the outcome of the other components prior to pursuing additional landfill capacity now. If the 103 million tons of capacity at the existing sites in public ownership are permitted, new landfills would have to provide an additional 547 million tons of capacity to meet the Action Plan objective of 50 years permitted capacity.

As mentioned earlier, the six highest ranking potential landfill sites identified (in alphabetical order) through a previous screening study are Blind Canyon, Browns Canyon, Elsmere Canyon, Mission-Rustic-Sullivan Canyons, Towsley Canyon and Toyon Canyon II. Figure 1-7 shows the locations of all these sites. During the preparation of this EIR, both the Browns Canyon and Toyon Canyon II sites have been dropped from further evaluation due to problematic geologic conditions which would make development of a Class III landfill at these sites infeasible (see Chapter 5). The County of Los Angeles Department of Regional Planning and the U.S. Forest Service are directing the preparation of a project specific EIR/EIS for Elsmere Canyon, and a discussion of this site is included as a feasible alternative element of the proposed Integrated System (see Chapter 5). Therefore, this Program EIR addresses in detail the remaining three sites: Blind Canyon, Mission-Rustic-Sullivan Canyons, and Towsley Canyon. Figure 1-7 shows the locations of all these sites. It should be noted that the Mountains Recreation and Conservancy Authority (exercising the joint powers authority of the Santa Monica Mountains Conservancy and the Rancho Simi Recreation and Park District) has signed a memorandum of understanding with a major property owner for the transfer of land, which includes much of Blind Canyon, from private to public ownership. Such a transaction would conflict with the development of the site as a landfill.

Estimated Site Capacities

To determine the potential environmental effects associated with each landfill site, a daily maximum waste disposal rate was identified for each landfill. The average daily disposal rate for any site would actually depend on the decision made

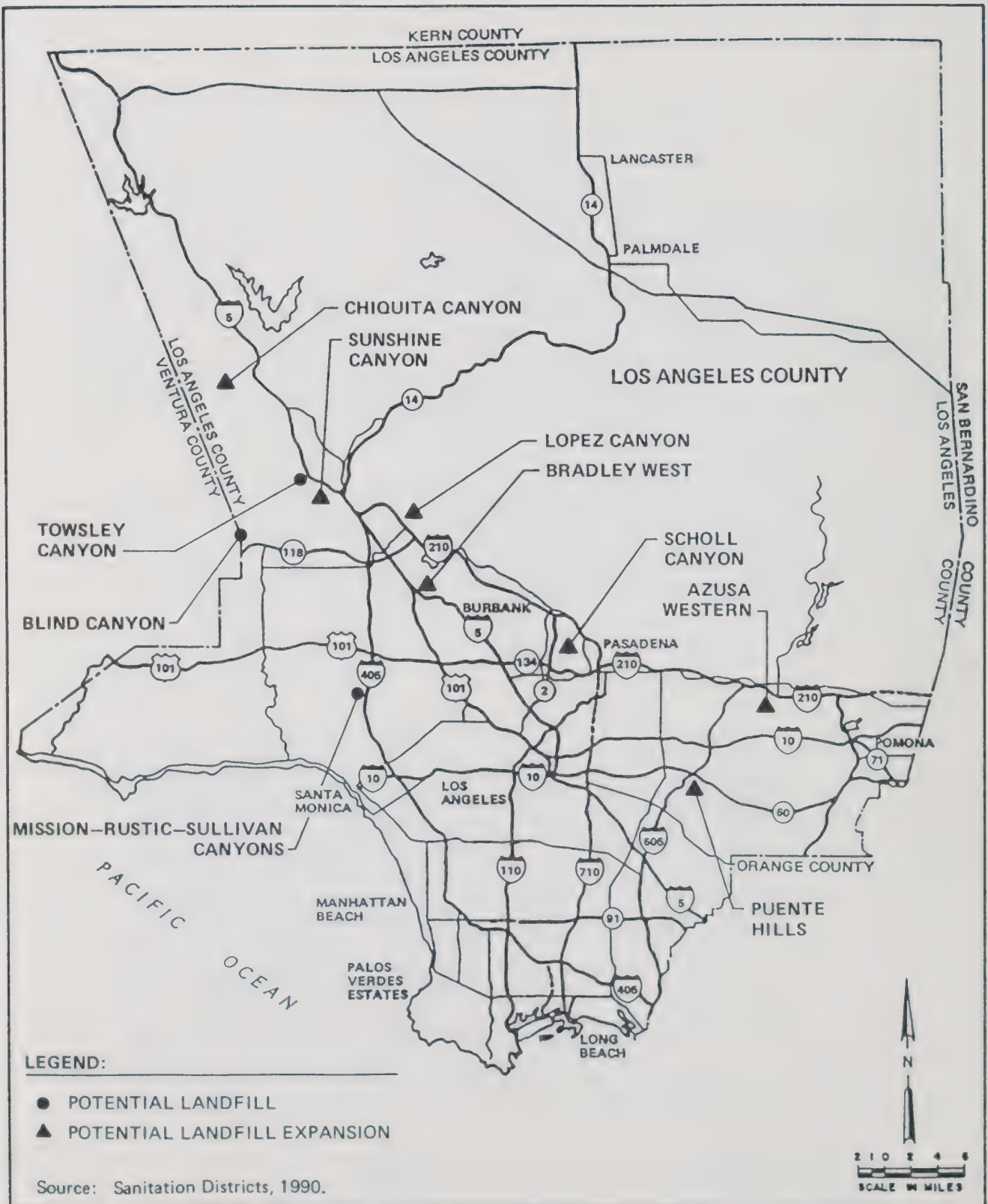


Figure 1-7 Location of Potential Landfills and Landfill Expansions

relative to expansions of existing sites and the ability to meet the goals of AB 939. For Blind and Towsley Canyons, a daily maximum disposal rate of 16,500 tons was used. The Mission-Rustic-Sullivan Landfill complex is proposed to be operated under a phased system with the Mission Canyon being operated in Phase I, accepting no more than 6,000 tons per day, and the Rustic-Sullivan Canyons being operated in Phase II accepting up to 16,500 tons per day, following completion of the Mission Canyon fill. The specified tonnages are maximum rates chosen for the purpose of determining the upper bounds of potential environmental impacts. Actual permitted tonnage rates could be lower.

A summary of physical landfill characteristics including projected site capacities of the three proposed landfill sites is presented in Table 1-2. The total fill capacity, as presented in the table, represents the topographic capacity of the landfill. These three sites represent a total of approximately 490 million tons of capacity. Figures 1-8 through 1-10 depict final fill areas for each of the three sites and show proposed property boundaries.

In accordance with Subchapter 15, Chapter 3, Title 23 of the California Code of Regulations, the proposed landfill site(s) would be classified and operated by the Sanitation Districts as Class III waste disposal facilities. Wastes to be received at the potential landfill sites would be limited to nonhazardous wastes which include putrescible and nonputrescible solids; and semisolid wastes, including wet garbage, trash, refuse, paper, rubbish, inert ashes, dewatered municipal sewage sludge, industrial wastes, construction and demolition wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, manure, vegetable or animal solid and semisolid waste, and other discarded waste. These wastes must not contain materials which must be managed as hazardous wastes or wastes which contain soluble pollutants in concentrations that exceed applicable water quality objectives or that could cause degradation of waters of the state (i.e., designated waste).

Permitting

A complex set of regulations and standards govern the disposal of nonhazardous solid wastes to Class III waste disposal facilities. These regulations are administered by local, county, state, and federal agencies. Prior to implementation of any of the proposed landfill sites, the appropriate permits must be obtained by the owner/operator of the facility. Each of the permitting agencies will specify requirements as conditions of granting permits.

Table 1-2 Summary of Landfill Final Fill Characteristics

Landfill site	Acreage		Total fill capacity, (million tons) ^a	Site life, (years) ^a
	Potential ownership area, (acres)	Total fill area, (acres)		
Blind Canyon	5,700	530	130	25
Towsley Canyon	5,100	760	225	44
Mission-Rustic-Sullivan Canyon Complex				
Mission Canyon	455	260	24	12
Rustic-Sullivan Canyons	2,870	745	101	20

^aTotal fill capacity and site life are based on a landfilling rate of 16,500 tons per day except for Mission Canyon which is based on a rate of 6,000 tons per day.

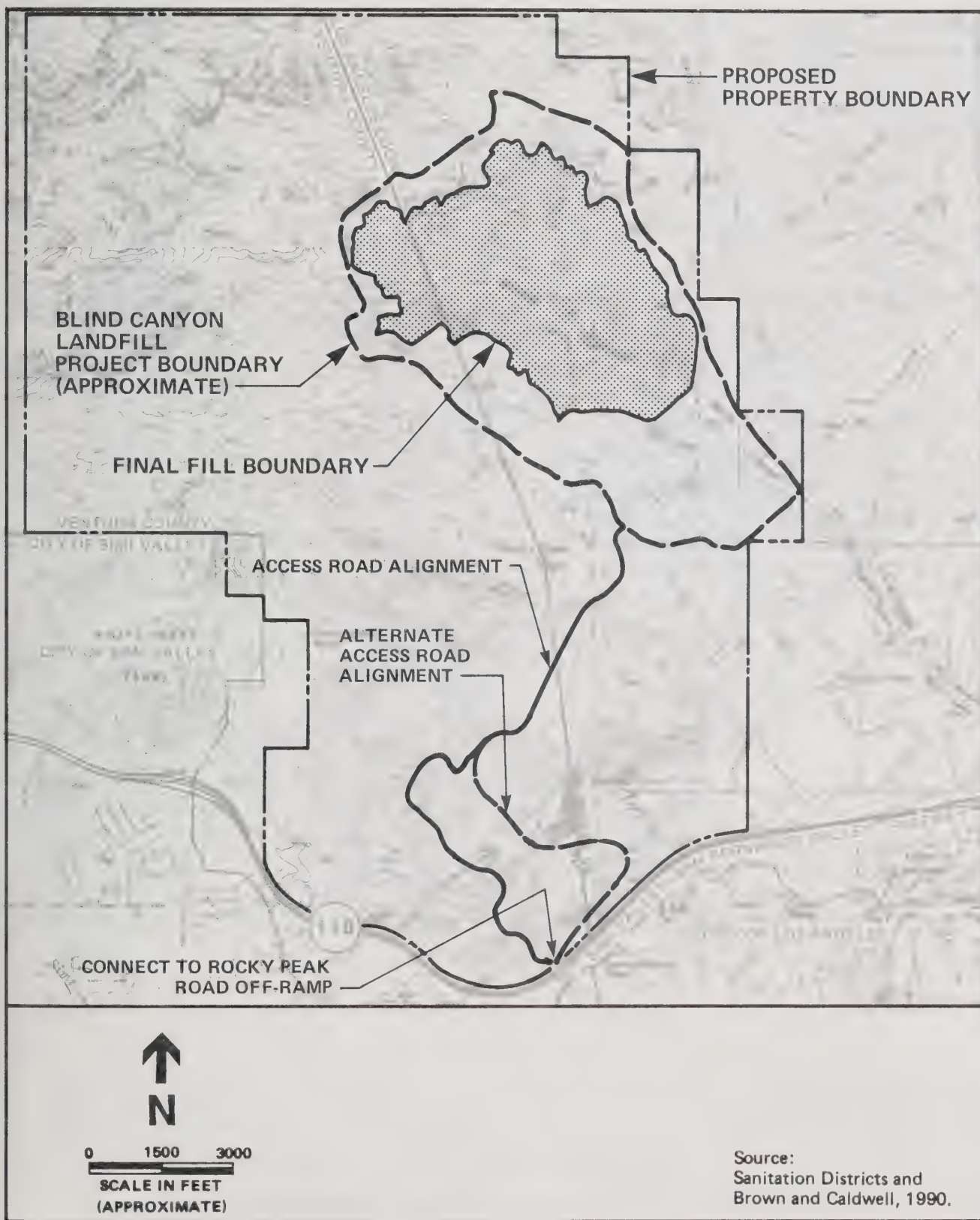


Figure 1—8 Site Location Map for Blind Canyon Landfill Site

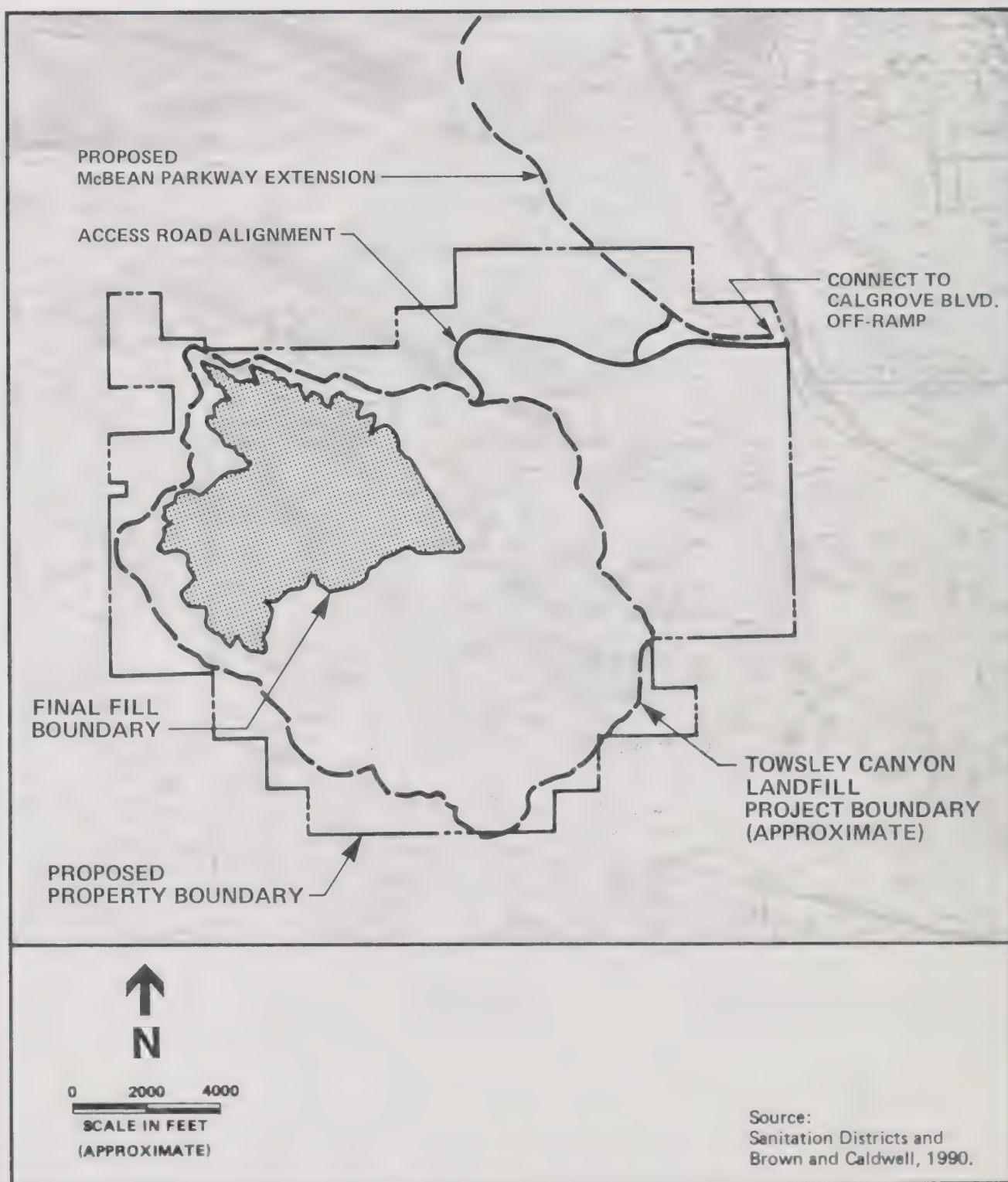


Figure 1-9 Site Location Map for Towsley Canyon Landfill Site

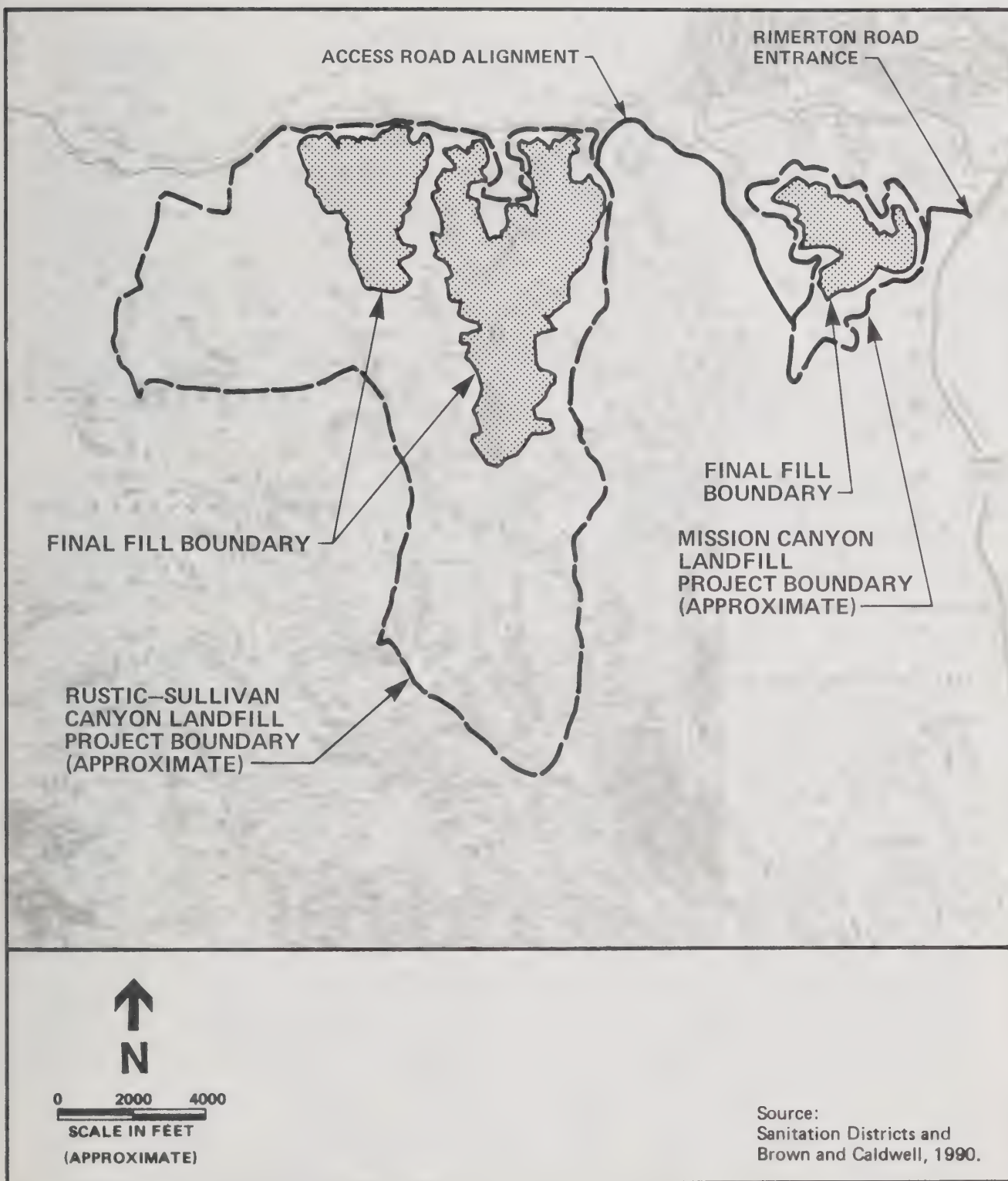


Figure 1-10 Site Location Map for Mission-Rustic-Sullivan Canyons Landfill Site

Land Use Permits. Local land use permits, or Conditional Use Permit (CUP), must be obtained from the local governing bodies by the Sanitation Districts for a proposed landfill development. For the potential landfill projects located in unincorporated Los Angeles County areas, Blind and Towsley Canyons, the CUP application would be reviewed by the County Regional Planning Staff and Regional Planning Commission. The portion of Blind Canyon within the jurisdiction of Ventura County would require a CUP from the Ventura County Planning Commission. The CUP application for Mission-Rustic-Sullivan Canyons must be approved by the City of Los Angeles Planning Commission. Portions of the proposed sites are also located within the County of Los Angeles General Plan's Significant Ecological Areas and must also be reviewed by the Los Angeles County's Significant Ecological Area Technical Advisory Committee (SEATAC). Various general plan amendments would be required for all of the sites.

Technical Operating Permits. The California Regional Water Quality Control Board--L.A. Region (RWQCB) must specify waste discharge requirements prior to operation of a potential landfill. The waste discharge requirements establish conditions related to water quality protection and control and associated comprehensive monitoring and reporting procedures. The waste discharge requirements also specify the types of wastes that may be accepted at the site. All of the potential landfill sites would be Class III facilities, accepting only non-hazardous solid waste. A Solid Waste Facilities (SWF) Permit is required by state law for all new landfills. The SWF Permit is issued by the Local Enforcement Agency (LEA) (the Los Angeles County Department of Health Services would be the LEA for Blind and Towsley Canyons, and the City of Los Angeles Bureau of Sanitation would be the LEA for Mission-Rustic-Sullivan Canyons) with the concurrence of the California Integrated Waste Management Board (CIWMB). The SWF permit would impose the state minimum standards for the operation of the landfills and would also incorporate site-specific conditions and requirements for monitoring and reporting. Prior to issuance of a SWF permit, the potential site must be found in conformance with the County Integrated Waste Management Plan (as required by AB 939). Permits would also be required from the South Coast Air Quality Management District, (SCAQMD) for the landfill gas management system.

In addition to the permits outlined above, an agreement may also be required from the California State Department of Fish and Game. The Department of Fish and Game agreement would specify measures for the protection and restoration of any wetlands impacted.

Disposal Operations

The proposed sanitary landfill operation involves placement, compaction, and covering of the refuse with soil or other suitable cover material prior to the end of each working day. The thickness of the daily cover would be 9 to 12 inches. Final cover on the top surface of the completed landfill would be a minimum of 5 feet and would meet all applicable regulations.

Environmental Control Features

Prior to start-up and ongoing during the solid waste disposal operations at the proposed landfills, various measures designed to control potential environmental impacts would be implemented. These features are intended to allow for safe operating procedures for the protection of public health and the environment. A brief description of these environmental control features is listed below, with additional discussion of these features presented in Chapters 3 and 4. A full-time site inspection and monitoring program would be established at each site which would be designed to maintain the integrity of the environmental control features.

Groundwater Protection System. A groundwater protection system consisting of a liner system, subsurface barriers, and extraction and monitoring wells would be installed at each site prior to commencement of landfill operations. The liner system would serve to prevent the migration of both potential leachate and landfill gas into the alluvial layers of soil beneath the fill. The Sanitation Districts are currently employing a composite liner design at several existing landfills to contain both landfill gas and potential leachates. This design which consists of (from bottom to top) an underdrain system, a clay liner with a maximum permeability of 10^{-6} centimeters per second (cm/sec), a synthetic liner with a maximum permeability of 10^{-12} cm/sec, a leachate collection and removal system, a geotextile filter, and a protective soil layer. This liner design exceeds current regulatory requirements. Subsurface barriers would be constructed at various locations surrounding the site to prevent off-site migration of potential leachate. Should water build up behind the barrier, extraction wells would pump the water out to be disposed of properly. Monitoring wells located downstream would detect any barrier malfunctions. These features are shown on Figures 1-11 and 1-12.

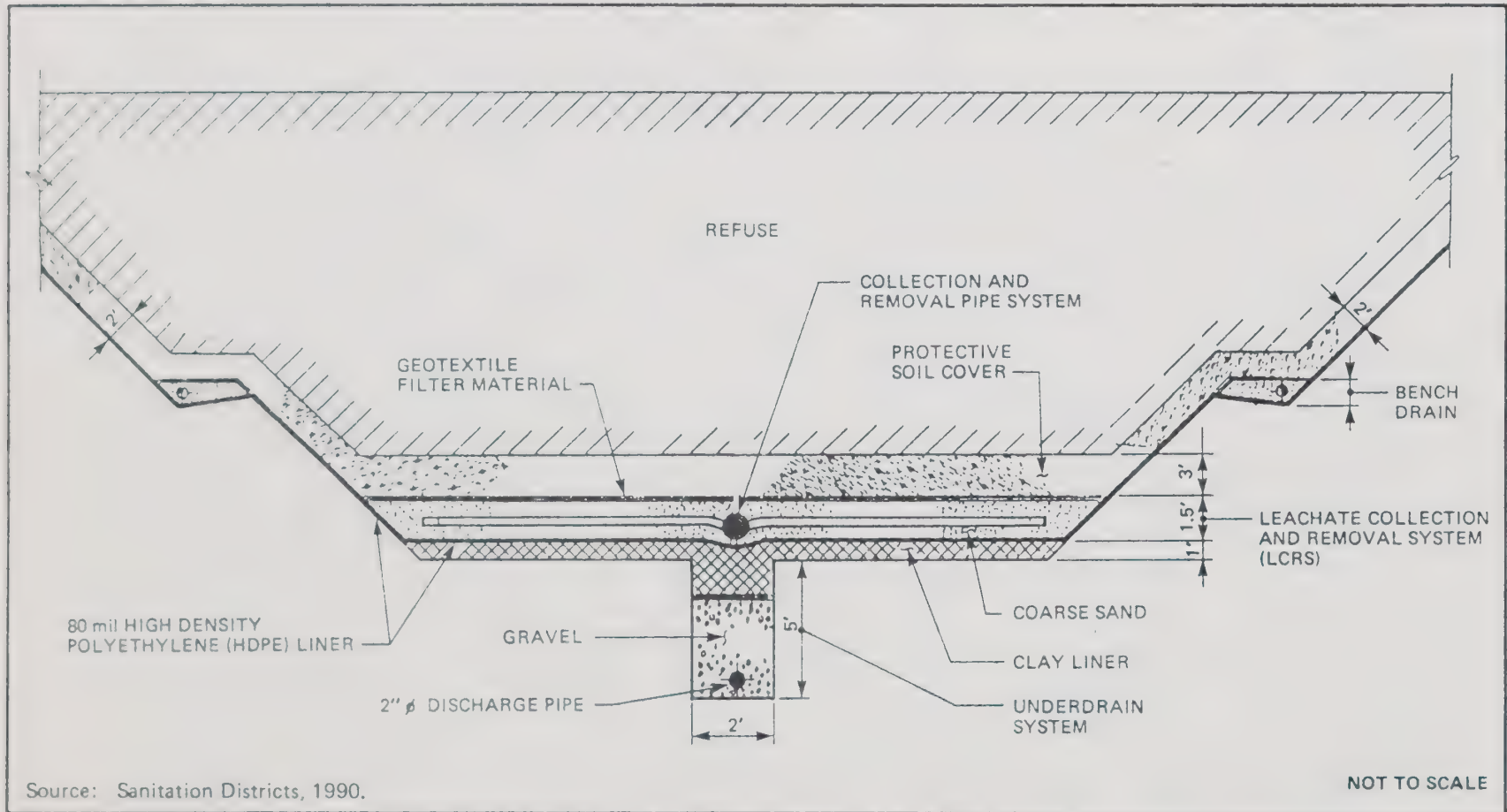


Figure 1-11 Cross-Section of Composite Liner System

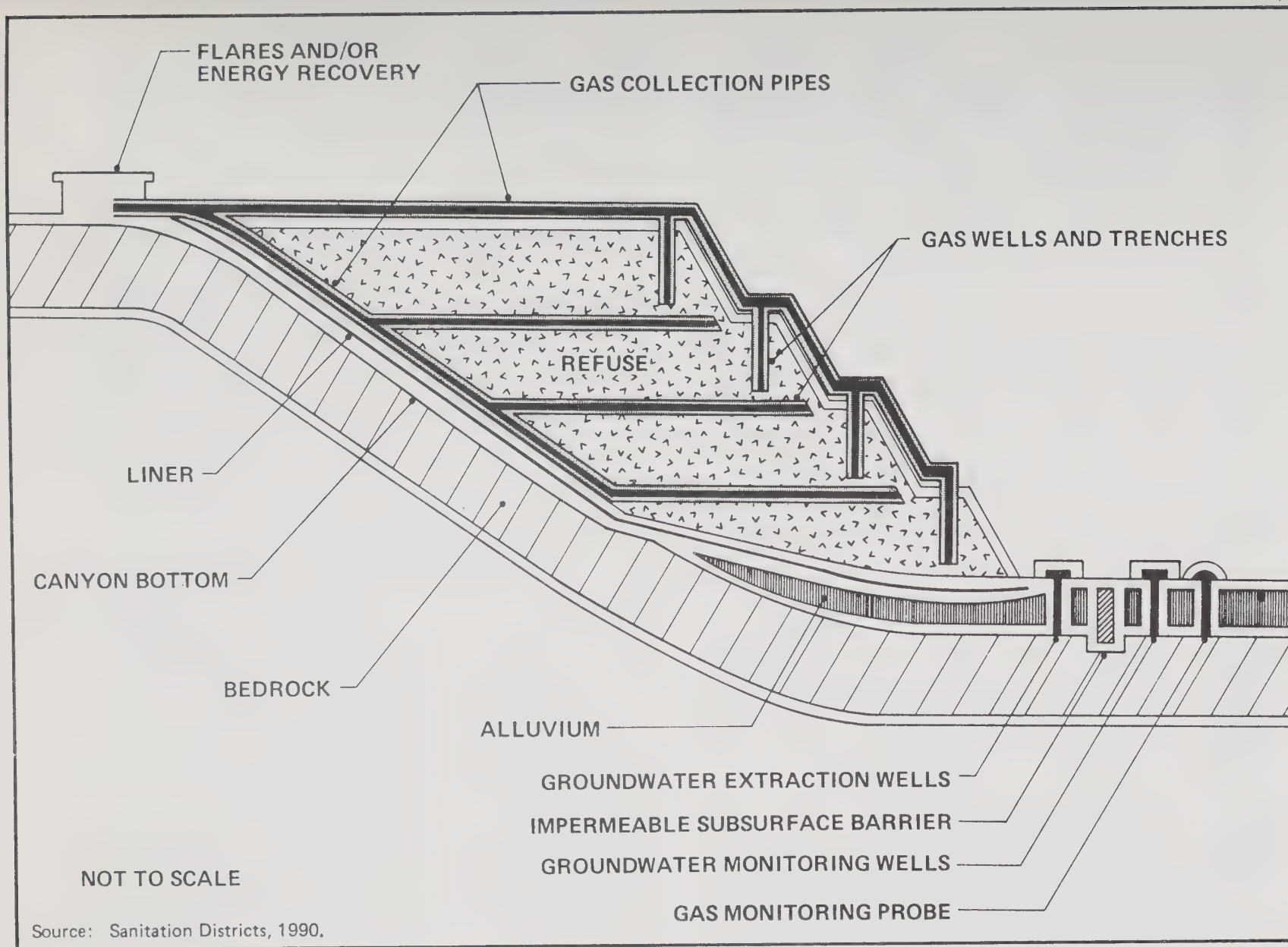


Figure 1-12 Landfill Environmental Control Systems

Landfill Gas Recovery System. Landfill gas is the product of the natural microbiological decomposition of buried organic material and typically contains nearly equal amounts of carbon dioxide and methane with traces of other decomposition by-products. Although the generation of gas in a sanitary landfill cannot be prevented, its lateral migration to adjacent areas and escape to the atmosphere can be controlled. The Sanitation Districts pioneered the utilization of effective gas systems for odor control at landfills and have employed these systems at all of their existing landfills. A landfill gas recovery system would be installed to assure complete conformance with Rule 1150.1 of the SCAQMD rules and regulations. Figure 1-12 is a schematic of landfill environmental control systems which includes various landfill gas recovery system features. To collect the landfill gas, vertical gas wells and horizontal trenches would be installed at various locations throughout the landfill. These wells and trenches would be connected to a blower through header pipelines. A vacuum would be applied drawing landfill gas into the collection system preventing its migration and escape to the atmosphere. Monitoring probes would be installed at the perimeter of the site to ensure effective operation of the gas collection system. In addition, the surface of the landfill is also monitored regularly.

Initially, the landfill gas would be managed through combustion at a landfill gas flaring station. However, as the quantity of landfill gas increases over time there are several energy recovery management alternatives that may be employed. The landfill gas may be processed and sold for use as a substitute for natural gas; combusted in a boiler steam turbine-generator facility to produce electricity, an option currently employed at three Sanitation Districts landfills; used for production of methanol; or utilized in some combination of the above options.

Surface Water Management System. Primary surface water drainage at the proposed new landfills would be controlled by channeled ditches, pipelines, drainage benches and interim drainage structures. Regulations specify that permanent precipitation and drainage control facilities at Class III waste management units must be designed to handle a 100-year, 24-hour storm, calculated by taking into account rainfall intensity, the soil characteristics, land use patterns, acreage, and hydraulic characteristics of the drainage area. The finished elevations of the top surface of the final landfill would be sloped a minimum of 2 percent. To minimize the potential for erosion on the steeper fill faces, drainage benches would be constructed at 40-foot vertical intervals to

intercept runoff. These drainage ditches would convey the surface runoff to sediment control basins and through permanent drains, before release to the natural water course.

Incoming Waste Checking. No hazardous wastes as defined by the California State Department of Health Services would be accepted for disposal at the proposed sites. An incoming waste checking program was originated by the Sanitation Districts and is in place at all of their existing sites for the prevention of illegal disposal of hazardous wastes. Such a program would be implemented at the proposed landfill sites. The system would consist of a random checking program to examine commercial and residential loads for the presence of illegal hazardous materials, and a radiation detector at the scale area to ensure that no loads containing any radioactive materials would be accepted. In addition to initial screening at the scale facility, continuous inspection at the disposal area would further control illegal disposal of hazardous material. Full-time hazardous waste inspectors employed by the Sanitation Districts for each site would continually screen the loads during unloading operations and would identify potentially hazardous materials to an equipment operator. All equipment operators would also undergo training relative to procedures for detecting unacceptable wastes as well as procedures to follow when such wastes are detected.

The County Department of Health Services would be notified upon detection of hazardous materials and would be consulted to determine appropriate handling procedures. The State Department of Health Services, Regional Water Quality Control Board, California Highway Patrol, and the Los Angeles County Districts' Attorney's Office would be notified of any special waste handling incidents. Such incidents also cause the Sanitation Districts to review the hauler's disposal privileges and in certain cases suspend such privileges.

Visual Access Control Measures. Visual access control measures would be taken to block views to refuse operations. The proposed new landfills would be constructed inside existing tributary canyons with the fill grades approximately 100 feet below the ridge lines at the head of the canyon. To ensure visual obstruction of the operating areas, the proposed sites would incorporate earthen berms (mounds) placed at the top of the fill and along the front face. Except at distant locations at higher elevations than the berms, the berms would shield the operation from visual access and also serve as a noise barrier. The berms would eventually become part of the front face final cover.

Dust Control Measures. Throughout the working day, especially during dry or windy weather, the disposal area, excavation area, and haul roads would be sprayed with water to minimize dust. Permanent roads would be paved to reduce dust production and would be swept on a regular basis. Extremely dusty loads would not be admitted to the landfill sites unless they have been thoroughly wetted. A citation system would be implemented to control the disposal of dusty materials. Repeat violations would result in the denial of future disposal privileges.

Litter Control Measures. Litter would be controlled by the daily application of cover material and the use of portable litter fences in the vicinity of the working area. Sanitation Districts' employees would routinely police the entrance area, all interior roads, and the access roads for litter and debris. The working area for landfill activities would be confined to as small an area as possible and would be moved to a more sheltered location if wind conditions dictate. The Sanitation Districts have employed an effective program at all of their sites to reduce litter from refuse vehicles on highways as well as local access. As an incentive to cover loads, the program requires customers to pay a surcharge on all uncovered loads arriving at the site with the potential to cause litter. A similar program would be utilized at potential new sites. Repeat violations would result in the denial of future disposal privileges.

Noise Control Measures. At all of the proposed landfill sites, noise from disposal operations would be controlled and minimized by the following measures: use of the best available noise suppression features on all site equipment and use of earthen berms on the edge of the landfill top surface.

Vector Control Measures. Birds would be controlled through the use of a program consisting of compaction of the waste, application of daily and intermediate cover, application of vegetation to completed fill areas, limiting the size of the working face, and the use of monofilament wires suspended above the operating area. The monofilament wires, which are presently in use at Sanitation Districts' operated sites, disrupt the seagull's landing pattern thus limiting access to the working face. Adequate compaction and daily covering of waste with suitable cover material would also prevent the attraction and breeding of flies or other insects and rodents.

Fire Control Measures. The proposed landfill operations and design and construction of ancillary facilities would be carried out in compliance with the appropriate County and/or City of Los Angeles Fire Department's fire prevention regulations.

Fire extinguishers would be installed on all site equipment and vehicles for extinguishing small fires. "No Smoking" signs would be posted near the scale area. Bare ground would be maintained around the disposal areas to provide a fire break, and a large-capacity water storage tank would be available on each of the sites to fill water vehicles. Additionally, fire hydrants would be provided, where feasible, at regular intervals around the perimeter of the site, including the scale area.

Odor Control Measures. The landfill gas collection and control system along with daily cover material would minimize off site odors from the proposed landfills. As previously described the landfill gas collection and control system removes the landfill gas from the site for combustion. During the combustion of the gas the potential for odor is eliminated. The practice of placing adequate cover material over newly placed refuse on a continuous basis also prevents odor generation.

Security

Security at the proposed landfills would be provided by chain link fencing at accessible portions of the landfill perimeter and a locking gate at the entrance near the scale area. During nonoperating hours, the landfill site would be patrolled. In addition, the scale house would be equipped with an alarm system.

Materials Recovery and Reuse

The materials recovery and reuse programs to be implemented at the proposed landfills would be based on, but not limited to, existing programs at Sanitation Districts operated sites, which target relatively pure loads of specific materials. Current recovery efforts include asphalt and clean dirt recovery, green waste recovery, and automobile tire shredding. A more completed discussion of materials recovery efforts at landfills is found in Section 3.2.

Closure and Postclosure Requirements

The proposed new landfills would be closed according to a closure and postclosure plan that is subject to approval by both the RWQCB and the CIWMB. All closure activities would be monitored and certified by a California registered civil engineer or registered geologist.

The final configuration on the sites would be defined by the surrounding topography, slope, stability considerations, and minimum gradients to provide adequate drainage of the

completed landfills after anticipated settlement. The final soil cover will comply with all cover requirements and regulations in effect at the time of closure.

The final land use for each landfill after site closure is expected to be recreational open space. This would be consistent with current land uses on surrounding properties. The landfill final cover would be planted with vegetation to blend with the adjacent hillside and enhance its value as open space. Potential may exist for more intensive developed open space (i.e., recreation facilities) as well.

A postclosure maintenance and monitoring program would be instituted to verify that containment and monitoring facilities have retained their integrity. Surface drainage control facilities, final vegetated fill areas, leachate detection monitoring, and the water quality monitoring plan for the sites would be implemented in cooperation with the RWQCB as part of the anticipated postclosure waste discharge requirements.

Financial requirements for closure and postclosure maintenance for the proposed landfills are specified in regulations which stipulate that the facility operator must pass a "financial test", guaranteeing that adequate funds would be available for closure and postclosure monitoring and maintenance activities. A portion of the disposal fee at each potential site would be dedicated specifically to a closure and postclosure trust fund.

1.2.4 Environmental Impact Analysis

Potential significant environmental impacts associated with components of the proposed Integrated System were evaluated in the areas of Land Use; Geology, Soil and Water Resources; Biological Resources; Traffic; Air Quality; Odor; Noise and Vibration, Aesthetics; Public Health and Safety; Cultural and Paleontological Resources; and Public Service and Utilities. Potential cumulative impacts that could result from the development of two or more sites are addressed in appropriate sections of this document. It should be noted that regional impacts could be experienced with or without the proposed program if the solid waste generated is disposed of within the metropolitan area at other locations. A summary of the detailed analysis of potential impacts from waste diversion programs and for each of the potential new landfill sites is shown in Tables 1-3 through 1-6. For discussion on each of the impacts, refer to Chapter 4.

Table 1-3 Waste Diversion Summary of Environmental Impacts and Mitigation Measures

Issue area	Potential significant impacts	Mitigation measures	Unavoidable significant impacts
1. Geology, soils, and water resources	<ul style="list-style-type: none"> a. Increases in water usage for recycling processing. b. Change in drainage patterns at processing or composting facilities. 	<ul style="list-style-type: none"> a. Maximize use of reclaimed water. b. Maintenance of surface water drainage control. 	<ul style="list-style-type: none"> a. Site-specific. b. Site-specific.
2. Biological resources	<ul style="list-style-type: none"> a. Loss of site-specific vegetation and habitat. 	<ul style="list-style-type: none"> a. Off-site restoration program. 	<ul style="list-style-type: none"> a. Site-specific.
3. Traffic	<ul style="list-style-type: none"> a. Local increase in traffic at recovery facilities and in residential areas due to separate collection of recyclables and regional increases due to transport of materials to recycling facilities. 	<ul style="list-style-type: none"> a. Site-specific roadway improvements, schedule modification to mandate off-peak hour transport, use of transfer facilities. 	<ul style="list-style-type: none"> a. Site-specific.
4. Odors	<ul style="list-style-type: none"> a. Release of nuisance odors from composting, material recovery facilities, curbside bins, storage facilities for recyclables. 	<ul style="list-style-type: none"> a. <ul style="list-style-type: none"> 1. Timely pickup of curbside materials. 2. Proper design and controlled operations of composting facilities. 	<ul style="list-style-type: none"> a. Site-specific.
5. Air resources	<ul style="list-style-type: none"> a. Dust emissions due to multi-collection of materials and additional vehicle miles to recycling facilities. b. Increase in vehicle emissions and emissions from increases in fuel. 	<ul style="list-style-type: none"> a. <ul style="list-style-type: none"> 1. Optimization of collection routes. 2. Schedule for off-peak hour transport. b. Vehicle and facility emission control. 	<ul style="list-style-type: none"> a. Site-specific. b. Site-specific.
6. Noise and vibration	<ul style="list-style-type: none"> a. Increase in neighborhood noise due to separate collection of recyclables. b. Local noise impact from processing facilities and composting facilities. 	<ul style="list-style-type: none"> a. <ul style="list-style-type: none"> 1. Use of state-of-the-art noise control features on collection vehicles. 2. Scheduling to minimize impact. b. <ul style="list-style-type: none"> 1. Use of state-of-the-art noise control features on collection vehicles. 2. Scheduling to minimize impact. 	<ul style="list-style-type: none"> a. Site-specific. b. Site-specific.

Table 1-3 Waste Diversion Summary of Environmental Impacts and Mitigation Measures (continued)

Issue area	Potential significant impacts	Mitigation measures	Unavoidable significant impacts
7. Aesthetics	a. Visual impact of processing facilities.	a. Design for appropriate enclosure and compatibility with surrounding land use.	a. Site-specific.
	b. Litter escape from operations.	b. 1. Require loads to be covered. 2. Ongoing maintenance, cleanup program.	b. Site-specific.
8. Cultural and paleontological resources	a. Siting of facilities at locations of historical or archaeological concern.	a. Analyze potential sites for impacts to such resources and redesign to avoid impact as necessary.	a. Site-specific.
9. Solid waste service and utilities	a. Increases in wastewater, fuel consumption, water consumption and energy demands due to increased collection routes and processing of recyclables materials.	a. Minimization of water use during processing. Use of reclaimed water. Optimization of collection and transport routes.	a. Site-specific.

Table 1-4 Blind Canyon Landfill Summary of Environmental Impacts
And Mitigation Measures

Issue area	Potential significant impacts	Mitigation measures	Unavoidable significant impacts
1. Geology, soils, and water resources	a. Contamination of groundwater from landfill leachate.	a. 1. Composite liner. 2. Comprehensive groundwater monitoring program. 3. Subsurface barrier system. 4. Control of solids to liquid ratio of waste. 5. Full-time inspection program to detect and appropriately manage any hazardous materials. 6. Control of rainfall infiltration with daily cover application and drainage control systems.	a. None
	b. Surface water contamination from runoff.	b. Minimize surface water contact with refuse through drainage control systems and application of daily cover.	b. None
	c. Erosion and slope failure from uncontrolled runoff.	c. 1. Interim and permanent drainage system, including desilting basins, in full compliance with Subchapter 15. 2. Revegetation of slopes. 3. Bench construction on all faces of the fill. 4. Utilize on-site desilting basins to meter flow such that preproject flow conditions are not exceeded.	c. None
	d. Native slope failures due to excavations.	d. All excavations to be made in accordance with recommendations from a registered engineering geologist.	d. None

Table 1-4 Blind Canyon Landfill Summary of Environmental Impacts
And Mitigation Measures (continued)

Issue area	Potential significant impacts	Mitigation measures	Unavoidable significant impacts
1. Geology, soils, and water resources (continued)	e. Structure or fill failure due to seismic activity.	e. 1. Design all fill and structural facilities to withstand most probable seismic event. 2. No landfill area over active faults.	e. None.
2. Biological resources	a. Removal of site from SEA 20, 21 designation.	a. Set aside completed landfill area as undevelopable SEA designation.	a. Removal of landfill from SEA designation.
	b. Loss of approximately 54 acres of Santa Susana tarplant, a state-listed rare plant, due to access road construction.	b. 1. Commitment of 162 acres of replacement habitat for replanting. 2. Permanent preservation of 700 acres of existing habitat containing the species. 3. Optimize actual access road alignment to minimize removal of the species and impose a 25-foot buffer area where appropriate.	b. Potential net loss of 54 acres of the species habitat due to uncertainty of replacement success.
	c. Loss of 90 acres of southern coast live oak riparian forest, including 640 trees (580 oaks, 60 sycamores).	c. 1. Replacement of habitat at ratio of 3:1. 2. Replacement of trees at 3:1 ratio.	c. Loss of sensitive communities until restored vegetation matures.
	d. Loss of 67 acres of coast live oak woodland including about 175 oak trees.	d. 1. Replacement of habitat with a restoration ratio of 3:1, about 200 acres, and 525 oak trees. 2. Replanting oak trees at a ratio of 3:1.	d. Loss of sensitive communities until restored vegetation matures.

Table 1-4 Blind Canyon Landfill Summary of Environmental Impacts
And Mitigation Measures (continued)

Issue area	Potential significant impacts	Mitigation measures	Unavoidable significant impacts
2. Biological resources (continued)	e. Loss of undetermined acreage of native grasses.	e. Incorporation of native grass species in the revegetation program.	e. None
	f. Loss of vegetation downstream of canyon due to loss of surface and/or groundwater from land-fill development.	f. Meter surface water runoff such that no change in flow is experienced downstream of fill area.	f. None
	g. Loss of a portion of a wildlife movement corridor during operating life of site.	g. 1. Provide adjacent revegetation and water to encourage and support wildlife movement. 2. Dedication of closed site as permanent open space.	g. Localized loss of wildlife movement corridor during operating life of site.
3. Traffic	a. Analysis shows no significant impact expected.	a. None required.	a. None
4. Odors and landfill gas	a. Odor release from refuse or landfill gas.	a. 1. Minimization of active dumping area.	a. None
		2. Rejection of odorous loads. 3. Comprehensive gas control system designed and operated to meet AQMD regulations. 4. Continuous monitoring program to assure efficient gas control system operation and compliance with AQMD Rule 1150.1. 5. Ongoing maintenance program for gas control system.	

Table 1-4 Blind Canyon Landfill Summary of Environmental Impacts
And Mitigation Measures (continued)

Issue area	Potential significant impacts	Mitigation measures	Unavoidable significant impacts
4. Odors and landfill gas (continued)	b. Landfill gas emissions.	b. 1. Comprehensive gas control system designed and operated to meet AQMD regulations. 2. Continuous monitoring program to assure efficient gas control system operation and compliance with AQMD Rule 1150.1. 3. Ongoing maintenance program for gas control system.	b. None
5. Air resources	a. Dust emissions.	a. 1. Continuous dust control on site. 2. Rejection of excessively dusty loads. 3. Use of paved and recycled asphalt haul roads where appropriate.	a. None
	b. Landfill gas emissions.	b. 1. Comprehensive gas control system designed and operated to meet AQMD regulations. 2. Continuous monitoring program to assure efficient gas control system operation and compliance with AQMD Rule 1150.1. 3. Ongoing maintenance program for gas control system.	b. None
6. Noise and vibration	a. Noise impact to the Indian Springs development due to landfill operations.	a. Placement of an earthen berm between refuse operation and development.	a. None

Table 1-4 Blind Canyon Landfill Summary of Environmental Impacts
And Mitigation Measures (continued)

Issue area	Potential significant impacts	Mitigation measures	Unavoidable significant impacts
7. Aesthetics	a. Change in topography due to landfill.	a. Placement of fill 100 feet below ridge to minimize visual access.	a. Change in landform.
	b. Visual impact of land-fill area to several proposed lots in the Indian Springs development.	b. Placement of earthen berm between refuse operations and development.	b. None
	c. Depending on access road alignment, visual impact of road to residents of Simi Valley, during construction and operation.	c. 1. Minimization of impact through actual alignment design.	c. None
		2. Use vegetation or structural means of screening along access road.	
	d. Litter escape from operation.	3. Partial vegetative and structural screening of flaring station.	d. None
		d. 1. Require all incoming loads to be covered, collection of fines for violation.	
		2. Reject any customers with continuous repeat violations.	
		3. Ongoing, full-time maintenance crews for cleanup.	
8. Public health and safety	a. Infestations of bird, insect, and rodent vectors.	4. Use of litter fences.	a. None
		a. 1. Spread, compact and provide daily cover for all waste.	
		2. Install monofilament lines over the active filling area to deter seagulls from landing.	

Table 1-4 Blind Canyon Landfill Summary of Environmental Impacts
And Mitigation Measures (continued)

Issue area	Potential significant impacts	Mitigation measures	Unavoidable significant impacts
8. Public health and safety (continued)		3. Prevent areas of standing water to control possible mosquito propagation.	
	b. Development of fire hazard.	b. 1. Comply with all applicable code and ordinance requirements of the local fire jurisdiction for construction, access, water mains, fire flows, and fire hydrants. 2. Install fire extinguishers on all site equipment and vehicles. 3. Alert local fire department in the event of a fire and use site vehicles for fire control. 4. Apply shredded green waste only to the front face of the fill as daily cover. 5. Put no smoking signs near the scale area. 6. Maintain a fire break around the disposal area and exercise caution around brush covered areas. 7. Divert any incoming vehicles with a smoldering load to an isolated area where it can be dumped, extinguished, and covered with dirt.	b. None
	c. Without proper site security, unauthorized dumping, vandalism, and exposure of people to on-site safety risks could occur.	c. 1. Provide chain link fencing at the landfill perimeter where required and a lockable gate at the entrance.	c. None

Table 1-4 Blind Canyon Landfill Summary of Environmental Impacts
And Mitigation Measures (continued)

Issue area	Potential significant impacts	Mitigation measures	Unavoidable significant impacts
8. Public health and safety (continued)		2. Employ a private guard service to patrol the site during non-operating hours.	
		3. Prohibit unauthorized access and invoke appropriate penalties for violators.	
		4. Monitor all incoming traffic to the landfill site.	
		5. Provide training to site employees in safety, first aid, accident prevention, and hazardous waste recognition, including emergency measures related to hazardous waste exposure.	
		6. Provide appropriate safety equipment, site communication facilities, first aid supplies, emergency eye wash stations and shower.	
	d. Explosion from landfill gas.	d. 1. Comprehensive gas control system designed and operated to meet AQMD regulations.	d. None
		2. Continuous monitoring program to assure efficient gas control system operation and compliance with AQMD Rule 1150.1.	
		3. Ongoing maintenance program for gas control system.	
	e. Impact due to release of hazardous materials.	e. Comprehensive, full-time program to detect and appropriately manage any hazardous materials.	e. None

Table 1-4 Blind Canyon Landfill Summary of Environmental Impacts
And Mitigation Measures (continued)

Issue area	Potential significant impacts	Mitigation measures	Unavoidable significant impacts
4. Cultural and paleontological resources	a. Damage or loss of cultural or paleontological resources due to landfill development.	a. 1. Optimization of access road design to minimize impact to rockshelter. 2. Analysis and documentation of rockshelter, if significantly impacted by access road. 3. Monitoring program for collection, analysis, and documentation of any significant findings during the construction and operating life of the site.	a. None
17. Public service and utilities	a. Operation of the landfill would require large quantities of water for irrigation, dust control, and domestic use.	a. 1. Maximize use of reclaimed water from wastewater treatment plants. 2. Use of drought-tolerant vegetation. 3. Treat and reuse landfill gas condensate for dust control following approval by RWQCB.	a. Decreases in local water supply if reclaimed water not available.

Table 1-5 Towsley Canyon Landfill Summary of Environmental Impacts
And Mitigation Measures

Issue area	Potential significant impacts	Mitigation measures	Unavoidable significant impacts
1. Geology, soils, and water resources	a. Contamination of groundwater from landfill leachate.	a. 1. Composite liner. 2. Comprehensive groundwater monitoring program. 3. Subsurface barrier system. 4. Control of solids to liquid ratio of waste. 5. Full-time inspection program to detect and appropriately manage any hazardous materials. 6. Control of rainfall infiltration with daily cover application and drainage control systems.	a. None
	b. Surface water contamination from runoff.	b. Minimize surface water contact with refuse through drainage control systems and application of daily cover.	b. None
	c. Erosion and slope failure from uncontrolled runoff.	c. 1. Interim and permanent drainage system, including desilting basins, in full compliance with Subchapter 15. 2. Revegetation of slopes. 3. Bench construction on all faces of the fill. 4. Utilize on-site desilting basins to meter flow such that preproject flow conditions are not exceeded.	c. None
	d. Native slope failures due to excavations.	d. All excavations to be made in accordance with recommendations from a registered engineering geologist.	d. None

Table 1-5 Towsley Canyon Landfill Summary of Environmental Impacts
And Mitigation Measures (continued)

Issue area	Potential significant impacts	Mitigation measures	Unavoidable significant impacts
1. Geology, soils, and water resources (continued)	e. Structure or fill failure due to seismic activity.	e. 1. Design all fill and structural facilities to withstand most probable seismic event. 2. No landfill area over active faults.	e. None.
2. Biological resources	a. Removal of site from SEA 20 designation.	a. Set aside completed landfill area as undevelopable SEA designation.	a. Removal of landfill from SEA designation.
	b. Loss of 1 acre of coast live oak woodland, and 9 acres of mulefat/southern willow scrub, including 232 oak trees.	b. 1. Design of access road alignment to minimize or eliminate impact. 2. Replacement of habitat at ratio of 3:1.	b. Loss of sensitive community until restored vegetation matures.
	c. Loss of vegetation downstream of canyon due to loss of surface and/or groundwater from landfill development.	c. Meter surface water runoff such that no change in flow is experienced downstream of fill area.	c. None
	d. Loss of a portion of a wildlife movement corridor during operating life of site.	d. 1. Provide adjacent revegetation and water to encourage and support wildlife movement. 2. Dedication of closed site as permanent open space.	d. Localized loss of wildlife movement corridor during operating life of site.
3. Traffic	a. Decrease in level of service on I-5 north bound and southbound ramps at Calgrove Blvd.	a. 1. Prohibit P.M. peak hour parking on Calgrove Blvd. 2. Provide two additional travel lanes on Calgrove Blvd. 3. Provide a left turn lane on the I-5 northbound off-ramp.	a. None

Table 1-5 Towsley Canyon Landfill Summary of Environmental Impacts
And Mitigation Measures (continued)

Issue area	Potential significant impacts	Mitigation measures	Unavoidable significant impacts
4. Odors and landfill gas	a. Odor release from refuse or landfill gas.	a. 1. Minimization of active dumping area. 2. Rejection of odorous loads. 3. Application of daily cover.	a. None
	b. Landfill gas emissions.	b. 1. Comprehensive gas control system designed and operated to meet AQMD regulations. 2. Continuous monitoring program to assure efficient gas control system operation and compliance with AQMD Rule 1150.1. 3. Ongoing maintenance program for gas control system.	b. None
5. Air resources	a. Dust emissions.	a. 1. Continuous dust control on site. 2. Rejection of excessively dusty loads. 3. Use of paved and recycled asphalt haul roads where appropriate.	a. None
	b. Landfill gas emissions.	b. 1. Comprehensive gas control system designed and operated to meet AQMD regulations. 2. Continuous monitoring program to assure efficient gas control system operation and compliance with AQMD Rule 1150.1. 3. Ongoing maintenance program for gas control system.	b. None

Table 1-5 Towsley Canyon Landfill Summary of Environmental Impacts
And Mitigation Measures (continued)

Issue area	Potential significant impacts	Mitigation measures	Unavoidable significant impacts
6. Noise and vibration	a. Noise impact to the Old Road due to landfill traffic accelerating on the freeway ramp.	a. Placement of noise barrier along on-ramp.	a. None
7. Aesthetics	a. Change in topography due to landfill.	a. 1. Placement of fill 100 feet below ridge to minimize visual access.	a. Change in landform.
	b. Visual impact of final landfill surface from Thornwood Drive development after the year 2015; and to the Oat Mountain ridge throughout most of the operating period.	b. 1. Placement of earthen berm between refuse operations and development. 2. Partial vegetative and structural screening of flaring station.	b. 1. View of final landfill surface after 20 years of operation. 2. View of operation and flaring station from Oat Mountain ridge.
	c. Visual impact of access road to traffic on the proposed McBean Parkway, and Towsley Canyon Park.	c. 1. Minimization of impact through actual alignment design. 2. Use vegetation or structural means of screening along access road.	c. None
	d. Potential litter escape from operation.	d. 1. Require all incoming loads to be covered. 2. Reject any customers with continuous repeat violations. 3. Ongoing, full-time maintenance crews for cleanup. 4. Use of litter fences where appropriate.	d. None

Table 1-5 Towsley Canyon Landfill Summary of Environmental Impacts
And Mitigation Measures (continued)

Issue area	Potential significant impacts	Mitigation measures	Unavoidable significant impacts
8. Public health and safety	a. Infestations of bird, insect, and rodent vectors.	a. 1. Spread, compact and provide daily cover for all waste. 2. Install monofilament lines over the active filling area to deter seagulls from landing. 3. Prevent areas of standing water to control possible mosquito propagation.	a. None
	b. Development of fire hazard.	b. 1. Comply with all applicable code and ordinance requirements of the local fire jurisdiction for construction, access, water mains, fire flows, and fire hydrants. 2. Install fire extinguishers on all site equipment and vehicles. 3. Alert local fire department in the event of a fire and use site vehicles for fire control. 4. Apply shredded green waste only to the front face of the fill as daily cover. 5. Put no smoking signs near the scale area. 6. Maintain a fire break around the disposal area and exercise caution around brush covered areas.	b. None

Table 1-5 Towsley Canyon Landfill Summary of Environmental Impacts
And Mitigation Measures (continued)

Issue area	Potential significant impacts	Mitigation measures	Unavoidable significant impacts
8. Public health and safety (continued)		7. Divert any incoming vehicles with a smoldering load to an isolated area where it can be dumped, extinguished, and covered with dirt.	
	c. Without proper site security, unauthorized dumping, vandalism, and exposure of people to on-site safety risks could occur.	c. 1. Provide chain link fencing at the landfill perimeter where required and a lockable gate at the entrance. 2. Employ a private guard service to patrol the site during non-operating hours. 3. Prohibit unauthorized access and invoke appropriate penalties for violators. 4. Monitor all incoming traffic to the landfill site. 5. Provide training to site employees in safety, first aid, accident prevention, and hazardous waste recognition, including emergency measures related to hazardous waste exposure. 6. Provide appropriate safety equipment, site communication facilities, first aid supplies, emergency eye wash stations and shower.	c. None
	d. Explosion from landfill gas.	d. 1. Comprehensive gas control system designed and operated to meet AQMD regulations.	d. None

Table 1-5 Towsley Canyon Landfill Summary of Environmental Impacts
And Mitigation Measures (continued)

Issue area	Potential significant impacts	Mitigation measures	Unavoidable significant impacts
8. Public health and safety (continued)		2. Continuous monitoring program to assure efficient gas control system operation and compliance with AQMD Rule 1150.1. 3. Ongoing maintenance program for gas control system.	
	e. Impact due to release of hazardous materials.	e. Comprehensive, full-time program to detect and appropriately manage any hazardous materials.	e. None
9. Cultural and paleontological resources	a. Damage or loss of cultural or paleontological resources due to land-fill development.	a. 1. Optimization of access road design to minimize impact to rockshelter. 2. Analysis and documentation of rockshelter, if impacted by landfill. 3. Monitoring program for collection, analysis, and documentation of any significant findings during the construction and operating life of the site.	a. None
10. Public service and utilities	a. Operation of the landfill would require large quantities of water for irrigation, dust control, and domestic use.	a. 1. Maximize use of reclaimed water from wastewater treatment plants. 2. Use of drought-tolerant vegetation. 3. Treat and reuse landfill gas condensate for dust control following approval by RWQCB.	a. Decrease in local water supply if reclaimed water not available.

Table 1-6 Mission-Rustic-Sullivan Canyons Landfill Complex
Summary of Environmental Impacts and Mitigation Measures

Issue area	Potential significant impacts	Mitigation measures	Unavoidable significant impacts
1. Geology, soils, and water resources	a. Contamination of groundwater from landfill leachate.	a. 1. Composite liner. 2. Comprehensive groundwater monitoring program. 3. Subsurface barrier system. 4. Control of solids to liquid ratio of waste. 5. Full-time inspection program to detect and appropriately manage any hazardous materials. 6. Control of rainfall infiltration with daily cover application and drainage control systems.	a. None
	b. Surface water contamination from runoff.	b. Minimize surface water contact with refuse through drainage control systems and application of daily cover.	b. None
	c. Erosion and slope failure from uncontrolled runoff.	c. 1. Interim and permanent drainage system, including desilting basins, in full compliance with Subchapter 15. 2. Revegetation of slopes. 3. Bench construction on all faces of the fill. 4. Utilize on-site desilting basins to meter flow such that preproject conditions are not exceeded.	c. None
	d. Native slope failures due to excavations.	d. All excavations to be made in accordance with recommendations from a registered engineering geologist.	d. None

Table 1-6 Mission-Rustic-Sullivan Canyons Landfill Complex
Summary of Environmental Impacts and Mitigation Measures (continued)

Issue area	Potential significant impacts	Mitigation measures	Unavoidable significant impacts
1. Geology, soils, and water resources (continued)	e. Structure or fill failure due to seismic activity.	e. 1. Design all fill and structural facilities to withstand most probable seismic event. 2. No landfill area over active faults.	e. None.
2. Biological resources	a. Removal of site from SEA 11 designation.	a. Set aside completed landfill areas as undevelopable SEA designation.	a. Removal of landfill area from SEA designation.
	b. Loss of 79 acres of sycamore alluvial woodland habitat in Rustic and Sullivan Canyons, including 75 coast live oaks 403 western sycamores.	b. Restore habitat and trees at a ratio of 3:1.	b. Loss of sensitive community until restored vegetation matures.
	c. Loss of 6 acres of southern coast line oak riparian forest, 5 acres of California walnut woodland and 0.6 acres of mixed riparian habitat in Mission Canyon.	c. Replacement of habitat at a ratio of 3:1.	c. Loss of sensitive community until restored vegetation matures.
	d. Loss of vegetation downstream of canyon due to loss of surface and/or groundwater from landfill development.	d. Meter surface water runoff such that no change in flow is experienced downstream of fill area.	d. None
	e. Loss of a portion of a wildlife movement corridor during operating life of site.	e. 1. Provide adjacent revegetation and water to encourage and support wildlife movement. 2. Dedication of closed site as permanent open space.	e. Localized loss of wildlife movement corridor during operating life of site.

Table 1-6 Mission-Rustic-Sullivan Canyons Landfill Complex
Summary of Environmental Impacts and Mitigation Measures (continued)

Issue area	Potential significant impacts	Mitigation measures	Unavoidable significant impacts
3. Traffic	a. Decreases in levels of service due to landfill traffic at Rimerton Road - I-405 and Sepulveda intersections.	a. Provide additional turning and through lanes at impacted intersections.	a. Decreases in levels of service due to landfill traffic.
4. Odors and landfill gas	a. Odor release from refuse or landfill gas.	a. 1. Minimization of active dumping area. 2. Rejection of odorous loads. 3. Application of daily cover.	a. None
	b. Landfill gas emissions.	b. 1. Comprehensive gas control system designed and operated to meet AQMD regulations. 2. Continuous monitoring program to assure efficient gas control system operation and compliance with AQMD Rule 1150.1, surface gas control. 3. Ongoing maintenance program for gas control system.	b. None
5. Air resources	a. Dust emissions.	a. 1. Continuous dust control on site. 2. Rejection of excessively dusty loads. 3. Use of paved and recycled asphalt haul roads where appropriate. 4. Application of daily cover.	a. None

Table 1-6 Mission-Rustic-Sullivan Canyons Landfill Complex
Summary of Environmental Impacts and Mitigation Measures (continued)

Issue area	Potential significant impacts	Mitigation measures	Unavoidable significant impacts
5. Air resources (continued)	b. Landfill gas emissions.	b. 1. Comprehensive gas control system designed and operated to meet AQMD regulations. 2. Continuous monitoring program to assure efficient gas control system operation and compliance with AQMD Rule 1150.1. 3. Ongoing maintenance program for gas control system.	b. None
6. Noise and vibration	a. Noise impacts to adjacent Mission Canyon residents due to landfill operations.	a. Construct earthen berms between fill operations and adjacent development.	a. Elevated noise levels in residential areas.
7. Aesthetics	a. Change in topography due to landfill.	a. Placement of fill approximately 100 feet below ridge to minimize visual access of Rustic-Sullivan Canyons.	a. Change in landform.
	b. Visual impact of the fill and flaring station to the Hub Junction trail and Mulholland Drive.	b. 1. Placement of earthen berm between refuse operations and development. 2. Partial vegetative and structural screening of flaring station.	b. View of flaring station from adjacent trails and Mulholland Drive. View of disposal operation from adjacent residential area.
	c. Visual impact of access road to residents of Mandeville Canyon and from Mulholland Drive during construction and operation.	c. 1. Minimization of impact through actual alignment design. 2. Use vegetation or structural means of screening along access road.	c. View of access road traffic from adjacent residential areas and Mulholland Drive.
	d. Litter escape from operation.	d. 1. Require all incoming loads to be covered. 2. Reject any customers with continuous repeat violations.	d. None

Table 1-6 Mission-Rustic-Sullivan Canyons Landfill Complex
Summary of Environmental Impacts and Mitigation Measures (continued)

Issue area	Potential significant impacts	Mitigation measures	Unavoidable significant impacts
7. Aesthetics (continued)		3. Ongoing, full-time maintenance crews for cleanup.	
		4. Use of litter fences where appropriate.	
8. Public health and safety	a. Infestations of bird, insect, and rodent vectors.	a. 1. Spread, compact, and provide daily cover for all waste. 2. Install monofilament lines over the active filling area to deter seagulls from landing. 3. Prevent areas of standing water to control possible mosquito propagation.	a. None
	b. Development of fire hazard.	b. 1. Comply with all applicable code and ordinance requirements of the local fire jurisdiction for construction, access, water mains, fire flows, and fire hydrants. 2. Install fire extinguishers on all site equipment and vehicles. 3. Alert local fire department in the event of a fire and use site vehicles for fire control. 4. Apply shredded green waste only to the front face of the fill as daily cover. 5. Put no smoking signs near the scale area. 6. Maintain a fire break around the disposal area and exercise caution around brush covered areas.	b. None

Table 1-6 Mission-Rustic-Sullivan Canyons Landfill Complex
Summary of Environmental Impacts and Mitigation Measures (continued)

Issue area	Potential significant impacts	Mitigation measures	Unavoidable significant impacts
8. Public health and safety (continued)		7. Divert any incoming vehicles with a smoldering load to an isolated area where it can be dumped, extinguished, and covered with dirt.	
	c. Without proper site security, unauthorized dumping, vandalism, and exposure of people to on-site safety risks could occur.	c. 1. Provide chain link fencing at the landfill perimeter where required and a lockable gate at the entrance. 2. Employ a private guard service to patrol the site during non-operating hours. 3. Prohibit unauthorized access and invoke appropriate penalties for violators. 4. Monitor all incoming traffic to the landfill site. 5. Provide training to site employees in safety, first aid, accident prevention, and hazardous waste recognition, including emergency measures related to hazardous waste exposure. 6. Provide appropriate safety equipment, site communication facilities, first aid supplies, emergency eye wash stations and showers.	c. None
	d. Explosion from landfill gas.	d. 1. Comprehensive gas control system designed and operated to meet AQMD regulations.	d. None

Table 1-6 Mission-Rustic-Sullivan Canyons Landfill Complex
Summary of Environmental Impacts and Mitigation Measures (continued)

Issue area	Potential significant impacts	Mitigation measures	Unavoidable significant impacts
8. Public health and safety (continued)		2. Continuous monitoring program to assure efficient gas control system operation and compliance with AQMD Rule 1150.1.	
		3. Ongoing maintenance program for gas control system.	
	e. Impact due to release of hazardous materials.	e. Comprehensive, full-time program to detect and appropriately manage any hazardous materials.	e. None
9. Cultural and paleontological resources	a. Damage or loss of archaeological, ethnographical or paleontological resources due to land-fill development.	a. Monitoring program for collection, analysis, and documentation of any significant findings during the construction and operating life of the site.	a. None
10. Public service and utilities	a. Operation of the land-fill would require large quantities of water for irrigation, dust control, and domestic use.	a. 1. Maximize use of reclaimed water from wastewater treatment plants. 2. Use of drought-tolerant vegetation. 3. Treat and reuse landfill gas condensate for dust control following approval by RWQCB.	a. Decreases in local water supply if reclaimed water not available.

1.2.5 Alternatives

The feasibility of a number of alternatives to the proposed Integrated System were evaluated which could potentially attain the objectives of the project, namely to avert the disposal crisis and implement the goals of the Action Plan. The term feasible in the context of this report refers to the capability of being accomplished in a successful manner within a reasonable time period, taking into account economic, environmental, legal, social, and technological factors. The No Program Alternative along with various other potential landfill sites and solid waste management techniques are outlined below.

No Program Alternative

The No Program Alternative would be characterized by no increase in existing levels of waste diversion and no provision for additional landfill capacity. This will allow for evaluation of the maximum potential environmental impacts which could result if the proposed program is not implemented. For a more complete discussion refer to Chapter 5, Alternatives, in the text.

When an operating site closes due to permit expiration or capacity depletion, the waste disposal quantities are redistributed to the remaining sites, usually in proportion to the distances of the remaining sites to the closed site. From a regional perspective, greater travel distances by trucks translate into increased traffic, energy use, and increased exhaust emissions. Locally, some remaining operating sites may experience additional traffic on surface streets, increased noise from operations, increased removal rate of native vegetation, and earlier closure of the site.

However, with only ten remaining major landfills in Los Angeles County, the capability no longer exists among these sites to absorb substantial waste loading increases from site closures. A danger to public health and safety would exist from litter, rodent and fly infestation, odors and fire hazards if refuse was not able to be collected from residences and businesses on a regular basis because adequate daily disposal capacity was not available. If emergency regulatory action were taken, allowing remaining solid waste facilities to accept the "excess" refuse, potential impacts at these locations could include increases in traffic and air emissions, noise from operations, and rate of on-site soil excavation and therefore in the rate of removal of native vegetation and early closure of the site. If, on the other hand, emergency out-of-county exportation of waste is implemented on an unplanned basis, many of the potential impacts of landfilling would be transferred to

the receiving site but at an extraordinarily high cost due to market forces and certainly at higher vehicle emissions, due to the greater haul distance.

Should the proposed sites not be used for landfilling purposes, other potential uses include recreation, park land, agricultural activity, and residential or commercial development.

Alternate Landfill Sites

As mentioned earlier, a preliminary alternate site study, jointly prepared by the staffs of the County Department of Public Works and the Sanitation Districts, reviewed 101 potential landfill sites within the metropolitan area according to a comprehensive set of criteria. The six top-ranked sites were chosen, as a manageable number of sites, for detailed environmental evaluation. Three of those sites are presented in this report (Blind, Towsley, Mission-Rustic-Sullivan Canyons). Elsmere Canyon, a feasible alternative, is currently being pursued by the private proponent. Potential environmental impacts resulting from the use of Elsmere Canyon are summarized in Table 1-7. Browns Canyon and Toyon Canyon II are considered to have problematic geological conditions and as a result are not considered feasible alternatives. Other canyons among the top ten ranked sites in the Alternate Site Study, which may be feasible alternatives are Fish Canyon, Sierra Madre Canyon, La Tuna Canyon, and Peña Canyon. Fish Canyon and Sierra Madre Canyon are fairly isolated, but would require landfill traffic to travel a substantial distance on surface streets adjacent to residential areas. This circumstance is clearly inferior to direct freeway access or very short distance of travel on surface streets not adjacent to residential areas that is proposed for the candidate sites. In addition, both canyons contain perennial streams with highly developed riparian areas. La Tuna Canyon is bisected by the 210 Freeway and is considered to be too small a site to meet the objectives of this project. Peña Canyon is located a significant distance from the freeway system and would likely require collection vehicles to travel the already congested Pacific Coast Highway to gain access to the site. El Toro Canyon, which is approximately 1 mile due north of Blind Canyon, is a site which has been proposed by a private interest independent of the site study. The proposed access to this site would be through an extension of Topanga Boulevard approximately 4 miles north from Highway 118 through existing and proposed residential development. This access would be clearly inferior to the shorter, more direct access to Blind Canyon from Rocky Peak Road. The utilization of access from Rocky Peak Road to El Toro would be financially infeasible due to the length, unless considered in the context of the use of El Toro after Blind Canyon is

Table 1-7 Summary of Potential Impacts from Elsmere Canyon

Issue	Impacts and mitigation measures
Land use	Portions of site are located within the Angeles National Forest. Conditional Use Permit would be required from Los Angeles County Regional Planning Commission.
Geology, soils, and water resources	Potential impacts could be mitigated by methods similar to those proposed in this report.
Biological resources	Potential loss of sparsely-located riparian habitat and approximately 2,200 oak trees. These impacts could be mitigated by methods similar to those proposed in this report for other potential sites.
Traffic	Proposed access is via a dedicated freeway off-ramp. No significant impacts anticipated. No cumulative impacts would exist from concurrent development of Elsmere Canyons with other potential sites.
Air quality	Initial modeling shows no anticipated significant impacts from development of Elsmere Canyon either alone or concurrently with Towsley Canyon, assuming mitigation measures similar to those proposed in this report.
Odor and landfill gas	Potential impacts could be mitigated by methods similar to those proposed in this report.
Noise and vibration	Due to remoteness of site, no significant impacts anticipated.
Aesthetics	Significant change in landform similar to other potential sites. Potential visual impacts from Santa Clarita Valley.
Public health and safety	Potential impacts could be mitigated by methods similar to those proposed in this report.
Cultural and paleontological resources	Should significant cultural or paleontological resources exist, potential impacts could be mitigated by methods similar to those proposed in this report.
Public service and utilities	Potential impacts could be mitigated by methods similar to those proposed in this report.

Sources: Sanitation Districts, 1990.
 Conditional Use Permit filed with County by the Elsmere Corporation, 1989.
 Oak Tree Permit filed with County by the Elsmere Corporation, 1989.
 Personal communication with the Elsmere Corporation, 1990.

filled. Locations of these sites are shown on Figure 1-13. A summary of potential environmental impacts resulting from the development of these sites is shown in Table 1-8. Full environmental evaluation of any of the potential sites would be required prior to development as a landfill.

Alternate Solid Waste Management Options

Municipal Solid Waste Composting. Composting is a biological process in which the organic substances of solid waste are converted into a humus-like material, which can be used as a soil amendment. Theoretically, the entire organic portion of the waste stream now disposed of at landfills could be processed with composting technology. Proper design may reduce potential environmental impacts such as gas and odor generation, aesthetics and vector infestations; however, insufficient markets exist for the tremendous amount of product that would be created. The Sanitation Districts does not believe that the application of this technology could replace to any substantial degree the need for landfilling mixed solid waste and, therefore, full-scale utilization of composting technology is not considered technically or economically feasible at the present time. Cities may well chose to utilize composting of selected portions of their waste stream such as the green waste component, in order to comply with the goals of AB 939.

Pyrolysis. Pyrolysis is the decomposition of organic material by heating in the absence or near absence of oxygen, producing a combustible gas or liquid oil. Under AB 939, pyrolysis would be considered a transformation process and, therefore, would not count towards waste diversion goals. Although commonly used in petroleum refining, this technology has not been proven on a full scale to be technically feasible for municipal solid waste handling on a full scale. Small-scale demonstrations on the order of 50 tons per day have shown that total emissions including combustion of gas or oil for energy recovery would be similar to incineration with heat recovery using the Best Available Control Technology.

Incineration With Heat Recovery (Refuse-to-Energy). Refuse-to-energy is a process where refuse is incinerated with or without preprocessing to either separate out recyclable materials or to shred the incoming waste. Under AB 939, refuse-to-energy is also defined as a transformation process. The heat from the combustion process converts water into steam which in turn drives a turbine-generator producing electricity. Refuse-to-energy technologies reduce the volume of solid waste by approximately 90 percent and the weight by approximately 70 percent; the remaining fraction being ash which must be landfilled. Although, the primary potential

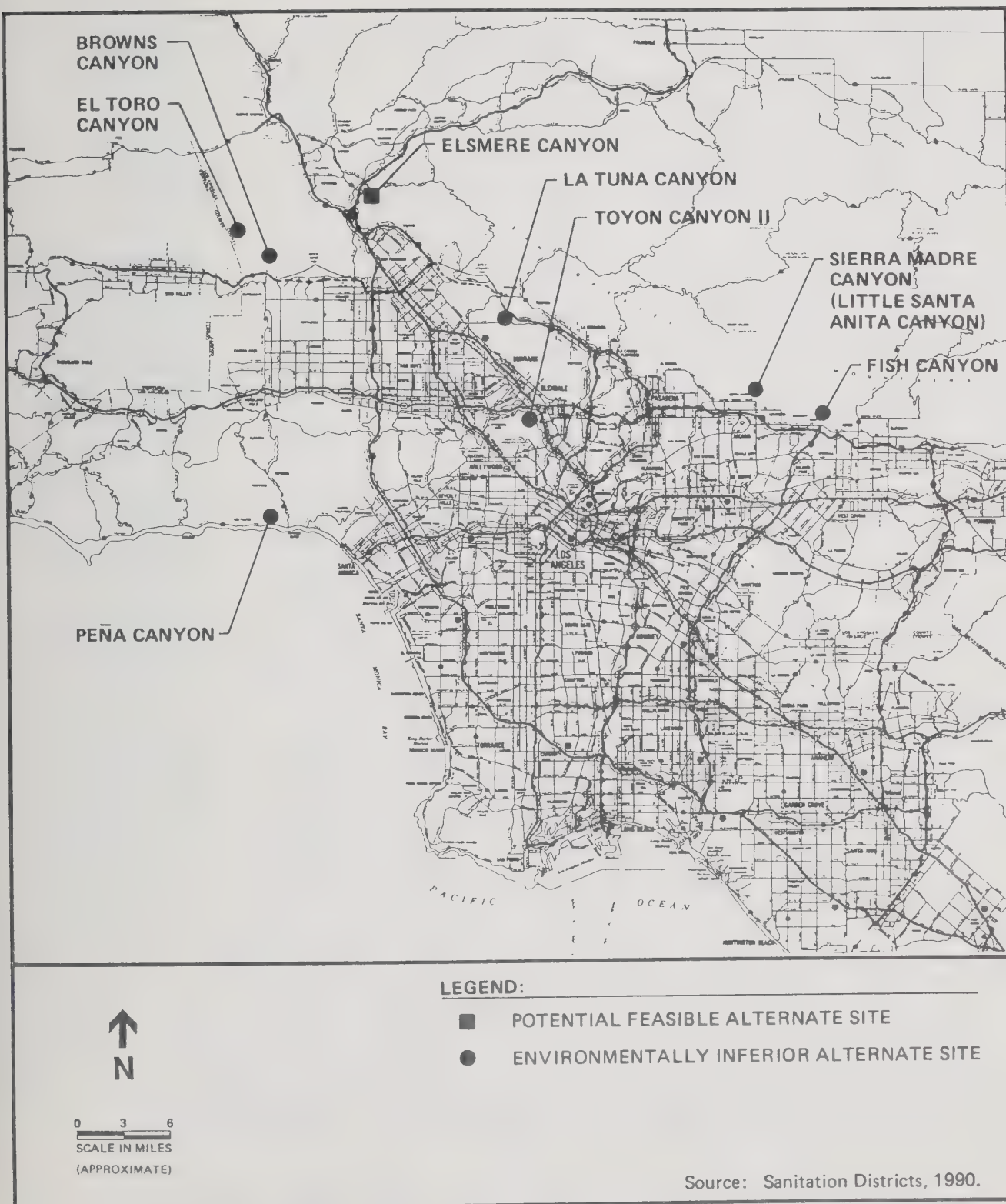


Figure 1-13 Location of Alternate Landfill Sites

Table 1-8 Summary of Potential Impacts from Alternate Sites

Location	Geology, soils and water resources	Biological resources	Traffic	Air quality	Odor and landfill gas
Browns Canyon	Potentially active faults are located within the site which may preclude development as a landfill.	Potential loss of riparian oak woodland habitat.	Proposed access route runs through a sparsely populated residential area.	Potential impacts could be mitigated by methods similar to those proposed in this report.	Potential impacts could be mitigated by methods similar to those proposed in this report.
El Toro Canyon	Potential impacts could be mitigated by methods similar to those proposed in this report. Seismic activity unknown.	Characterization of biological resources on site unknown.	Proposed access through residential areas along Topanga Boulevard.	Potential impacts could be mitigated by methods similar to those proposed in this report.	Potential impacts could be mitigated by methods similar to those proposed in this report.
Fish Canyon	Comprises an extremely large drainage area; including 80 ft. falls. Adequate drainage control is likely to be infeasible. Limited cover soil available. Seismic activity unknown.	Loss of highly developed riparian habitat which includes presence of perennial stream.	Access would be through residential areas near Azusa/Duarte boundary.	Potential impacts could be mitigated by methods similar to those proposed in this report.	Potential impacts could be mitigated by methods similar to those proposed in this report.
La Tuna Canyon	Potential impacts could be mitigated by methods similar to those proposed in this report. Seismic activity unknown.	Reserved as open space because of the site's biological significance.	Access would be via La Tuna Canyon Road, through residential and commercial areas.	Potential impacts could be mitigated by methods similar to those proposed in this report.	Potential impacts could be mitigated by methods similar to those proposed in this report.
Peña Canyon	Potential impacts could be mitigated by methods similar to those proposed in this report. Seismic activity unknown.	Characterization of biological resources on site unknown.	Pena Canyon is distant from freeway access. Access to the site would be via either residential areas to the north or Pacific Coast Highway, currently congested.	Potential impacts could be mitigated by methods similar to those proposed in this report.	Potential impacts could be mitigated by methods similar to those proposed in this report.
Sierra Madre Canyon (Little Santa Anita Canyon)	Comprises an extremely large drainage area. Adequate drainage control is likely to be infeasible. Limited cover soil available. Seismic activity unknown.	Loss of highly developed riparian habitat which includes presence of perennial stream.	Access to the site would be through heavily populated areas. The canyon is distant from freeway access.	Potential impacts could be mitigated by methods similar to those proposed in this report.	Potential impacts could be mitigated by methods similar to those proposed in this report.
Toyon Canyon II	The site contains faults capable of causing surface rupture.	The site is part of an Ecologically Important Area and includes riparian vegetation. Compliance with oak tree ordinance requirements would mitigate the loss of at least 60 oak trees.	Traffic from a landfill in Toyon Canyon II could potentially significantly impact Griffith Park related traffic.	Regional air emissions due to landfill traffic would be lower than other alternate and proposed sites due to central location. Potential stationary source emission impacts could be mitigated by methods similar to those proposed in this report.	Potential impacts could be mitigated by methods similar to those proposed in this report.

Table 1-8 Summary of Potential Impacts from Alternate Sites (continued)

Location	Noise and vibration	Aesthetics	Public health and safety	Cultural resources	Public service and utilities
Browns Canyon	Potential significant noise impacts on residents from refuse vehicle traffic along access road.	Change in landform. Potential view of final landfill surface and/or operating area from existing residential development 1 to 2 miles south of canyon.	Potential impacts could be mitigated by methods similar to those proposed in this report.	Unknown whether significant cultural, historical or paleontological resources exist.	Potential impacts could be mitigated by methods similar to those proposed in this report.
El Toro Canyon	Due to remoteness of site, no significant impacts anticipated.	Change in landform. Visual access likely due to remoteness of site.	Potential impacts could be mitigated by methods similar to those proposed in this report.	Cultural resources on site are presently known.	Isolation of site could make provision of utilities prohibitively difficult.
Fish Canyon	Potential significant noise impacts on residents from refuse vehicle traffic along access road.	Change in landform. Potential visual access from the 210 Freeway.	Potential impacts could be mitigated by methods similar to those proposed in this report.	Cultural resources on site are presently unknown.	Potential impacts could be mitigated by methods similar to those proposed in this report.
La Tuna Canyon	Potential significant noise impacts on residents from refuse vehicle traffic along access road.	Change in landform. Visual access from La Tuna Canyon Road.	Potential impacts could be mitigated by methods similar to those proposed in this report.	Cultural resources on site are presently unknown.	Potential impacts could be mitigated by methods similar to those proposed in this report.
Peña Canyon	Potential significant noise impacts on residents from refuse vehicle traffic along access road.	Change in landform. Potential visual access from residential development north of the site and from Pacific Coast Highway south of the site.	Potential impacts could be mitigated by methods similar to those proposed in this report.	Cultural resources on site are presently unknown.	Potential impacts could be mitigated by methods similar to those proposed in this report.
Sierra Madre Canyon (Little Santa Anita Canyon)	Potential significant noise impacts on residents from refuse vehicle traffic along access road.	Change in landform. Potential visual access from the City of Sierra Madre.	Potential impacts could be mitigated by methods similar to those proposed in this report.	Most of the site lies within the Sierra Madre Historical Wilderness area with historical structures present.	Potential impacts could be mitigated by methods similar to those proposed in this report.
Toyon Canyon II	1983 EIR predicted potentially significant increases in ambient noise levels in Griffith Park due to landfill operation in Toyon Canyon II.	Change in landform. Fill area would be clearly visible from surrounding communities to the north and east of the site.	Potential impacts could be mitigated by methods similar to those proposed in this report.	The 1983 EIR determined that no significant archaeological resources exist on site. Although the site is considered to be of high paleontological significance, impacts could be mitigated by methods similar to those proposed in this report.	Fuel consumption by refuse vehicles would be minimized due to central location. Other potential impacts related to public service and utilities could be mitigated by methods similar to those proposed in this report.

Source: Sanitation Districts, 1990.

environmental impacts include traffic, noise, emissions of criteria pollutants and toxic air emissions, successful operation of these plants have been demonstrated nationwide, including the ability to meet strict air quality regulations. Although there are many refuse-to-energy facilities in operation and being implemented in this country, only two, the Commerce Refuse-to-Energy Facility and the Southeast Resource Recovery Facility, are currently operating in Southern California. The Sanitation Districts are not planning additional refuse-to-energy facilities at this time. Intense public and political resistance in the mid-1980s and the current energy surplus make implementation of additional refuse-to-energy facilities extremely unlikely in the near future.

Transfer Stations. A transfer station is a facility where refuse collected in standard-size vehicles is transferred into large volume trucks which can more economically transport wastes over longer distances. Although not a disposal technique in itself, the use of transfer stations is a viable solid waste handling method, used in conjunction with waste diversion activities and landfill disposal, which can reduce the environmental impacts of these components. Reduced impacts may include transportation costs, air emissions, traffic, and fuel consumption. Materials processing and recovery facilities can be incorporated easily into transfer station implementation. Potential local environmental impacts include those similar to materials processing facilities such as noise, dust, aesthetics, and traffic impacts which could be mitigated by appropriate design and siting considerations. It should be noted, however, that public resistance to siting these facilities has been strong in the past and locations may be limited.

Waste-by-Rail. Rail transport of waste to remote (out-of-county) disposal sites is potentially a complimentary component to the proposed Integrated System, in that the daily disposal quantities going to new sites would be directly reduced corresponding to the daily capacity of the rail transport and disposal component. This component would include the basic elements of (1) a transfer/loading station, (2) rail transport, (3) an unloading station, and (4) ultimate disposal. In early 1989, at the request of the San Gabriel Valley Association of Cities, the Sanitation Districts solicited proposals for the implementation of a rail haul system for Los Angeles County. Two proposals have been selected as the most complete in addressing the project objective, which is to evaluate a privately financed rail haul system which is technically, environmentally, and economically sound. The social and economic feasibility will be determined by whether or not cities are willing to commit definite quantities of waste on a "put or pay" basis, at a substantial cost increase, in order to implement this system. The Sanitation Districts have initiated

an agreement which could lead to the formation of a waste-by-rail authority. The Sanitation Districts are currently working in conjunction with the San Gabriel Valley Association of Cities to secure waste supply commitments from cities in Los Angeles County and adjacent counties as an initial step toward implementation.

Potential environmental impacts from the operation of a system include those associated with the loading stations, the transportation route, the unloading stations and disposal sites. These potential impact areas include aesthetics, odor, noise, traffic, increased air emissions, litter, water quality, biological resources, and other potential impacts similar to those described in this report for the potential landfill locations and waste processing facilities.

1.2.6 Public Involvement Program

During the preparation of the Program EIR, various activities were undertaken to (1) inform the public about the impending waste management crisis, (2) to explain the Solid Waste Management Action Plan and its role in averting the crisis, and (3) to outline the scope of the Program EIR and obtain public input. A comprehensive presentation on the Action Plan and Program EIR was incorporated into the Sanitation Districts' ongoing speakers' bureau program during the earliest planning stages. In addition, two public workshops were held during the preparation of the Program EIR to further meet the objectives outlined above. The combined attendance for the two workshops was over 200 and included representatives from special interest groups, governmental agencies, private industry, and the general public. Outreach and notification activities prior to the workshops consisted of direct mail notification to approximately 12,000 parties, newspaper advertisements, and follow-up phone calls to selected individuals and organizations. During the workshops, a slide presentation was given describing the Action Plan and Program EIR. Following the presentation, attendees were divided into small groups to discuss key topics and report back to the assembly on these discussions. A list of workshop attendees is included in Chapter 7 of the Program EIR.

Two focus groups were utilized during the preparation of the Program EIR for receiving input from a broad cross section of interested parties. One focus group, the Citizens Solid Waste Environmental Advisory Committee, is a group which was formed by the Sanitation Districts and is active in keeping

abreast of Sanitation Districts solid waste management endeavors. The other group was formed during the preparation of the Program EIR specifically to gain input on the proposed project from interested cities, waste industry representatives, community groups, and special interest groups. A list of these groups is included in Chapter 7 of the Program EIR.



CHAPTER 2

Introduction

CHAPTER 2

INTRODUCTION

This Program Environmental Impact Report (EIR) evaluates the impacts of an Integrated Solid Waste Management System (Integrated System) for Los Angeles County (County). An Integrated System is a complementary set of individual solid waste management components, which together provide a long-term responsible and effective solution to the impending waste disposal crisis. The system presented in this report would include (1) waste diversion programs in order to minimize the amount of waste which must be disposed of, (2) expansion of existing landfills, and (3) siting new landfills in order to provide sufficient disposal capacity to meet the needs of the County in the long term. This chapter provides an introduction to the Integrated System through a discussion of existing solid waste management practices in the County, as well as project background and objectives.

2.1 OVERVIEW OF EXISTING SOLID WASTE MANAGEMENT SYSTEM

The management of solid waste in the County metropolitan area has always been a complex undertaking involving public and private refuse collection services, public and private operation of solid waste facilities, multiagency regulation, and regional versus local considerations. Solid waste management has become an increasingly difficult task in recent years, with the implementation of progressively more stringent regulations for landfill operations, public resistance to siting of all types of solid waste facilities including refuse-to-energy facilities, increasingly longer hauls among major County areas; escalating solid waste management costs, and dwindling landfill capacity.

Currently, virtually all of the municipal solid waste in the County metropolitan area is disposed of in ten major Class III sanitary landfills located within the area. These ten landfills, the locations of which are shown on Figure 2-1, presently accept approximately 14.7 million tons of municipal solid waste per year (47,000 tons per day (TPD) over a 6-day week).

Approximately 80 percent of the waste stream requiring disposal at landfills is hauled directly to the sites by the collection vehicles. The remaining 20 percent is hauled to 11 major transfer stations for eventual transport to disposal facilities. The locations of these existing transfer stations are shown on Figure 2-2. Most of the facilities are located in

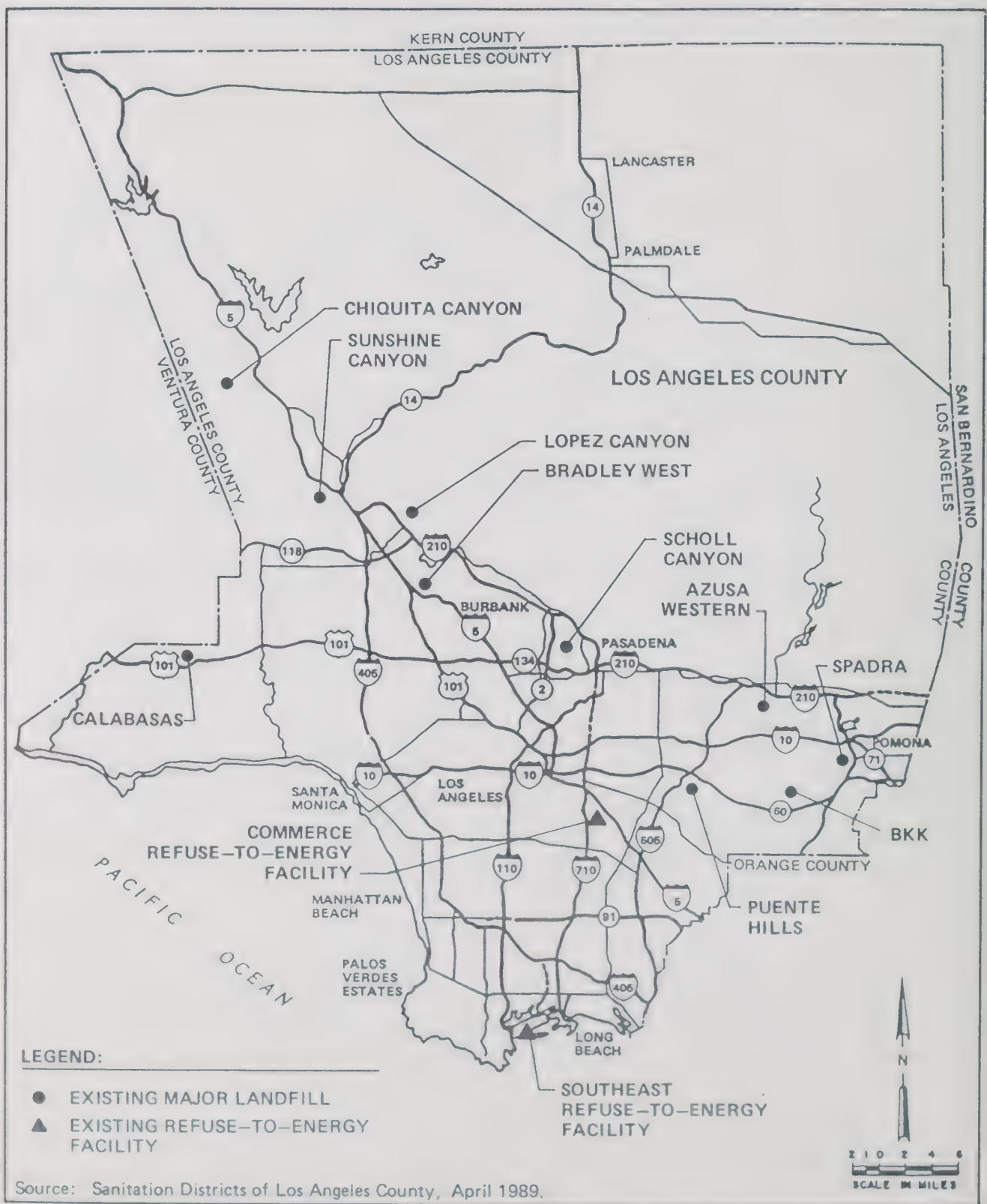


Figure 2-1 Locations of the Ten Major Los Angeles Metropolitan Area Landfills and Refuse-to-Energy Facilities

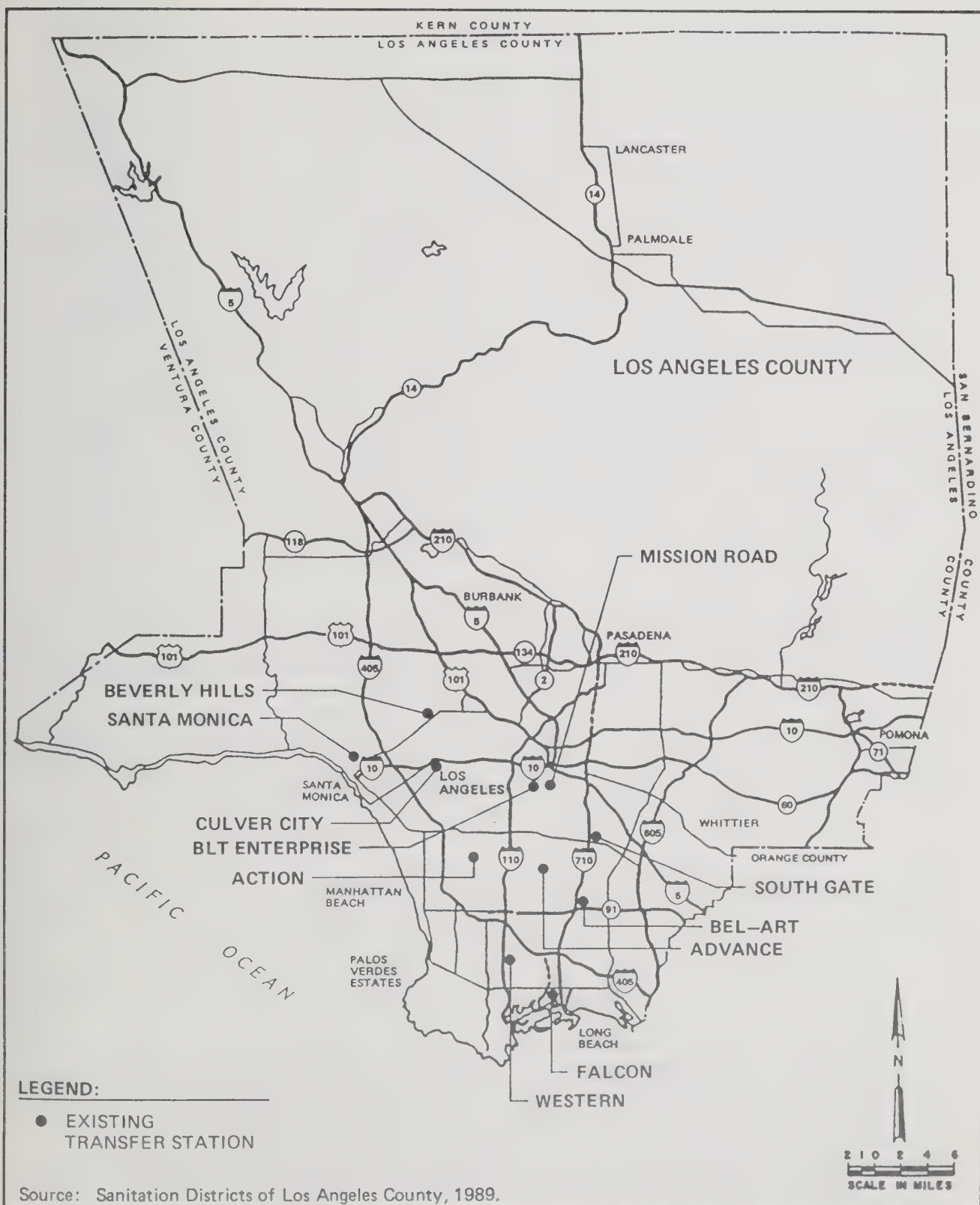


Figure 2-2 Locations of Existing Transfer Stations

the southern part of the County, which does not have any remaining disposal sites.

In addition to transfer stations and disposal facilities, two refuse-to-energy plants are managing a portion of the waste stream in the County. Currently, the Commerce Refuse-to-Energy Facility, a cooperative effort of the City of Commerce and the Sanitation Districts, is disposing of approximately 360 TPD, 7 days per week, of residential and commercial waste. Also, the City of Long Beach, in conjunction with the Sanitation Districts, developed the Southeast Resource Recovery Facility (SERRF), a 1,350 TPD refuse-to-energy facility, located on Terminal Island in Long Beach. While implementation of refuse-to-energy is an important component of an integrated solid waste system in many parts of this country and the world, development of new refuse-to-energy facilities will not be included at this time as a component of the proposed Integrated System for the County. Lack of public and political support which resulted in the stoppage of a number of proposed refused-to-energy facilities in the late 1980s, coupled with the current energy surplus (therefore low value of energy to the utilities) make additional implementation unlikely in the near future.

Various programs exist in the County for the management of household hazardous waste which is not allowed at Class III disposal facilities. The County Department of Public Works and the Los Angeles County Sanitation Districts (Sanitation Districts) are in the process of evaluating a continuous program for collection of these materials throughout the County. Currently, the Sanitation Districts and County are holding a series of household hazardous waste "round up" days. Dates and locations of recently held events were:

The Rose Bowl, Pasadena	Saturday, April 28, 1990
Long Beach City College Stadium	Saturday, May 5, 1990
Sanitation Districts Joint Administration Office, Whittier	Saturday, May 19, 1990
Cal Poly, Pomona	Saturday, June 16, 1990

Several cities also hold periodic local roundups for residents. These cities include Glendale, Los Angeles, Inglewood, El Segundo, Redondo Beach, Duarte, Claremont, Whittier, and Santa Fe Springs. The City of Santa Monica has a permanent drop-off facility open to the public. Additionally, many cities throughout the County have established or are in the process of developing curbside collection programs for "readily recyclables," such as newspapers, cans, and glass bottles.

2.2 PROJECT BACKGROUND

In September 1987, the County Board of Supervisors, instructed the County Department of Public Works to develop a report on solid waste management options, with the assistance of the Sanitation Districts. A second request from the Board of Supervisors called for a study identifying the best potential disposal sites currently not being utilized for sanitary landfills. The following reports were prepared in response to these requests. These reports and all other reference materials used in this Program EIR are listed in Appendix A, References.

2.2.1 Solid Waste Management Status and Disposal Options in Los Angeles County

This document was initially prepared through a cooperative effort of the solid waste staffs of the County Department of Public Works, the City of Los Angeles Bureau of Sanitation, and the Sanitation Districts. The report evaluates the existing solid waste management system and options for future strategies. Major conclusions of the February 1988 study were:

- By 1992, 6,400 TPD of waste will have no place for disposal unless waste diversion activity is increased, or existing landfills are expanded, and new facilities are sited. The disposal shortfall will increase to approximately 50,000 TPD by the year 2000.
- Implementation of countywide residential recycling, landfill recycling, and green waste recovery programs, with 100 percent participation and efficiency, will reduce the total waste stream by no more than about 27 percent.
- Expansion of existing landfills could add up to 330 million tons of capacity and increase daily disposal capabilities, delaying the disposal shortfall only through 1995.

2.2.2 Preliminary Alternate Site Study

The staffs of the County Department of Public Works and the Sanitation Districts conducted a planning-level study in late 1987 to analyze and identify potential new landfill sites. A three-phase approach was used, which considered a comprehensive set of technical, environmental, and social factors to evaluate 101 potential sites. The purpose of the study was to narrow the list of potential sites to a manageable number so that more detailed environmental studies could be undertaken on the identified sites. The six highest ranking sites identified (in alphabetical order) were Blind Canyon, Browns Canyon, Elsmere Canyon, Mission-Rustic-Sullivan Canyons, Towsley Canyon, and

Toyon Canyon II. The environmental evaluation of these sites is presented in this report. However, because Elsmere Canyon is being pursued by a private proponent, the Elsmere Corporation, a joint EIR/EIS is being prepared for that project by the County Department of Regional Planning and the U.S. Forest Service.

2.2.3 Solid Waste Action Plan for Los Angeles County

Considering the long lead time (up to seven years) required to implement landfill expansions or new sanitary landfills, it is imperative to immediately undertake actions necessary to avert the impending disposal crisis. Towards this end, the solid waste management staffs of the City of Los Angeles, the County, and the Sanitation Districts prepared a coordinated Solid Waste Management Action Plan (Action Plan), which is based on the findings of the above mentioned reports. The Action Plan was formally approved by the Board of Supervisors in April 1988, by the Sanitation Districts Boards of Directors in May and June 1988, and by the City of Los Angeles in May 1990. Key recommendations in the Action Plan include:

- Support the implementation of residential source separation programs and green waste recovery programs in all areas, and pursue the feasibility of facilities to recover material from mixed waste streams.
- Support implementation of statewide public education/awareness programs regarding solid waste issues and the necessity for recycling.
- Reaffirm support of the management of solid waste in the County through a reasonable balance of public and private operations and facilities, including a regional public landfill system.
- Adopt a policy goal of providing for 50 years of permitted landfill capacity to be held in public ownership, with appropriate land use projections, for use through public, private or joint venture operations as necessary to achieve the above-referenced management strategy.
- Initiate studies necessary to determine the feasibility of public ownership and permitting of new landfill sites identified in the Alternate Site Study, initiate discussions with property owners regarding availability of property, and secure purchase options as appropriate.
- Support the maximum technically and environmentally feasible expansion of existing landfills.

Since approval of the Action Plan, the Sanitation Districts and the County have been pursuing activities recommended by the Action Plan including obtaining options for public ownership of sites identified in the Alternate Site Study, implementing green waste, tire and wood recovery programs at the Scholl Canyon, Spadra, Calabasas and Puente Hills Landfills, initiating residential source separation programs in unincorporated areas of the County, and developing a recycling education curriculum. The Sanitation Districts also act as a resource for cities, providing guidance regarding implementation of community recycling programs. A more detailed discussion of these and other Action Plan related activities can be found in Chapter 3, Project Description. Rail haul of wastes to remote (out-of-county) disposal sites is being pursued by the Sanitation Districts as a possible alternate component of the Integrated System and is addressed in Chapter 5, Alternatives.

2.3 COOPERATION IN IMPLEMENTATION OF THE ACTION PLAN

No single component of the Integrated System will responsibly abate the crisis in the near or distant future. Similarly, no one individual, organization, or agency has sole responsibility for implementing the Action Plan on a countywide basis. Effective long-term solid waste management can only be achieved through a concerted effort of governmental agencies, private waste management companies, and the public.

The public's role in averting the impending crisis cannot be understated. Of primary importance is the public's ability to reduce the amount of solid waste requiring disposal through source reduction and through the reuse and recycling of materials. The public should also encourage local government to implement residential curbside recycling programs, which should be supported through full participation.

The Board of Supervisors has designated the County Department of Public Works as having primary responsibility for waste management planning in the County of Los Angeles. This department works closely with the Sanitation Districts, which have extensive experience in siting, permitting, and operating solid waste facilities and which currently operate four sanitary landfills, one transfer station, two recycling centers, three landfill gas-to-energy facilities, and one refuse-to-energy facility. The Sanitation Districts solid waste program includes not only planning and operating activities but ongoing research and development. The planning and operating roles of these agencies provide opportunity for the implementation of regional waste diversion and disposal programs.

2.4 SOLID WASTE

This section describes the time analysis performed to project solid waste generation and discusses the composition of the three basic categories of solid waste.

2.4.1 Solid Waste Generation Projection

In order to effectively plan for reliable solid waste management, the amount of solid waste generated within the County must be quantified. This is difficult because estimates must be made of the quantity of waste currently being diverted from landfill disposal. The existing level of diversion combined with the amount of waste being disposed of at landfills and refuse-to-energy facilities is the current total solid waste generation rate. For the purposes of this evaluation, a reasonable range of the current diversion level will be assumed to be 10 to 25 percent of the total waste generated. Approximately 49,000 TPD of nonhazardous residential, commercial/industrial, construction/demolition, dewatered sewage sludge, and inert solid waste are currently being disposed of at ten major landfills and two refuse-to-energy facilities. Therefore, if 10 to 25 percent of the waste stream is currently being diverted, the total solid waste generation in the metropolitan area would be 55,000 to 65,000 TPD. At an estimated increase of 1 percent per year due to population growth (which is consistent with the growth management plan of the 1989 Air Quality Management Plan), the amount of waste generated can be projected over time, as depicted on Figure 2-3. Assuming no increase in per capita waste generation, the metropolitan area's waste requiring disposal could grow to average 86,000 TPD by the year 2013, due solely to population increases.

To determine the long-term disposal need, a time analysis was performed which accounts for existing and anticipated landfill capacities, permit restrictions, operational constraints, and proximity of wastesheds to disposal sites. The methodology for the analysis entailed distributing yearly increases in the total amount of waste in need of disposal to existing sites without exceeding daily disposal capabilities. As disposal sites close due to exhausted capacity or permit expiration, the excess waste is distributed to the remaining sites most likely to receive the excess based on who the primary users of the closing sites are and wasteshed proximity. The assumed disposal tonnage at each site is increased in a continuous fashion until the maximum daily disposal capability is met. No expansion of existing landfills or permitting of new sites was assumed to take place. A complete description and listing of assumptions used in this analysis as well as the resulting tabulated disposal tonnages are presented in Appendix B. As can be seen on Figure 2-4, a

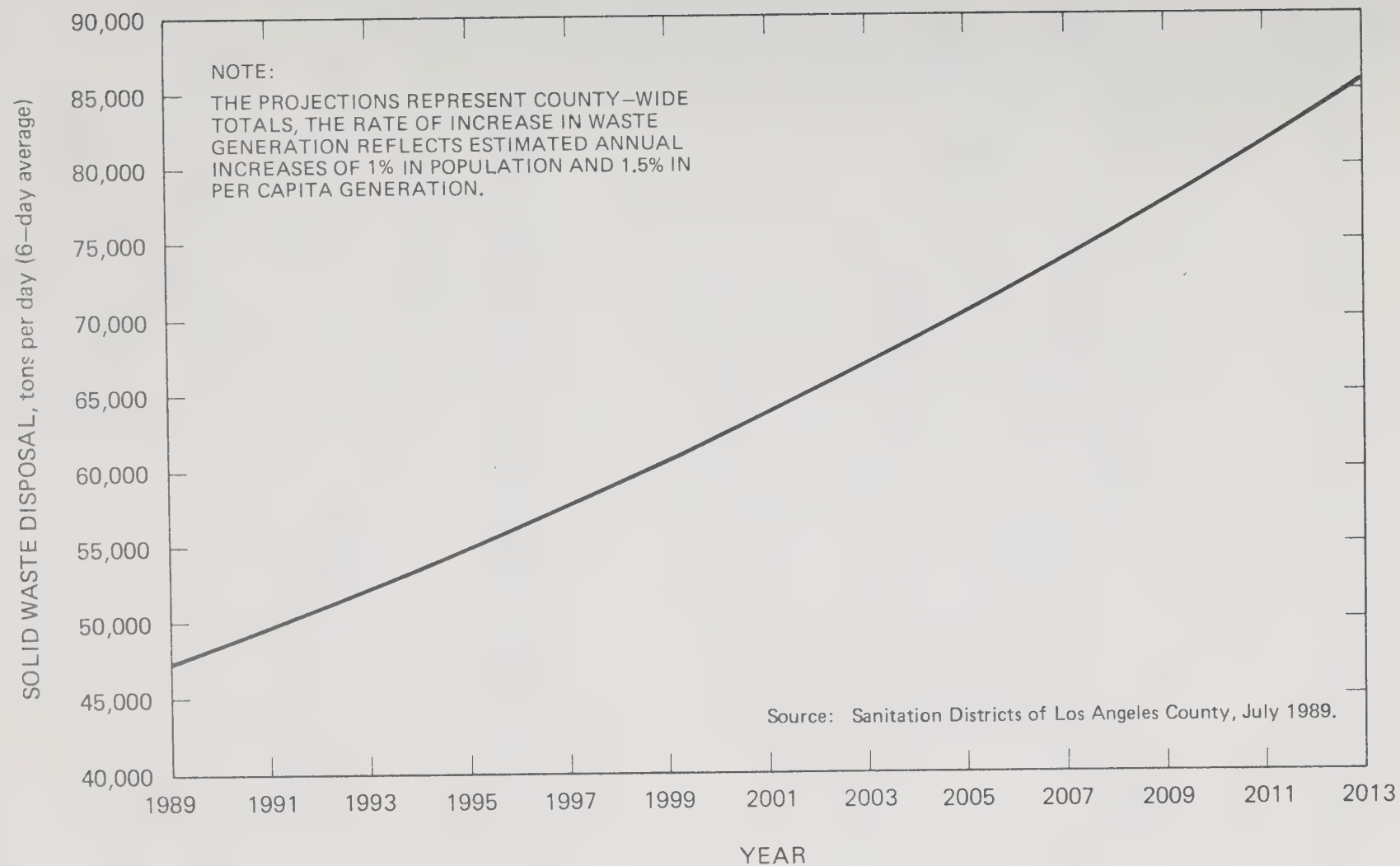
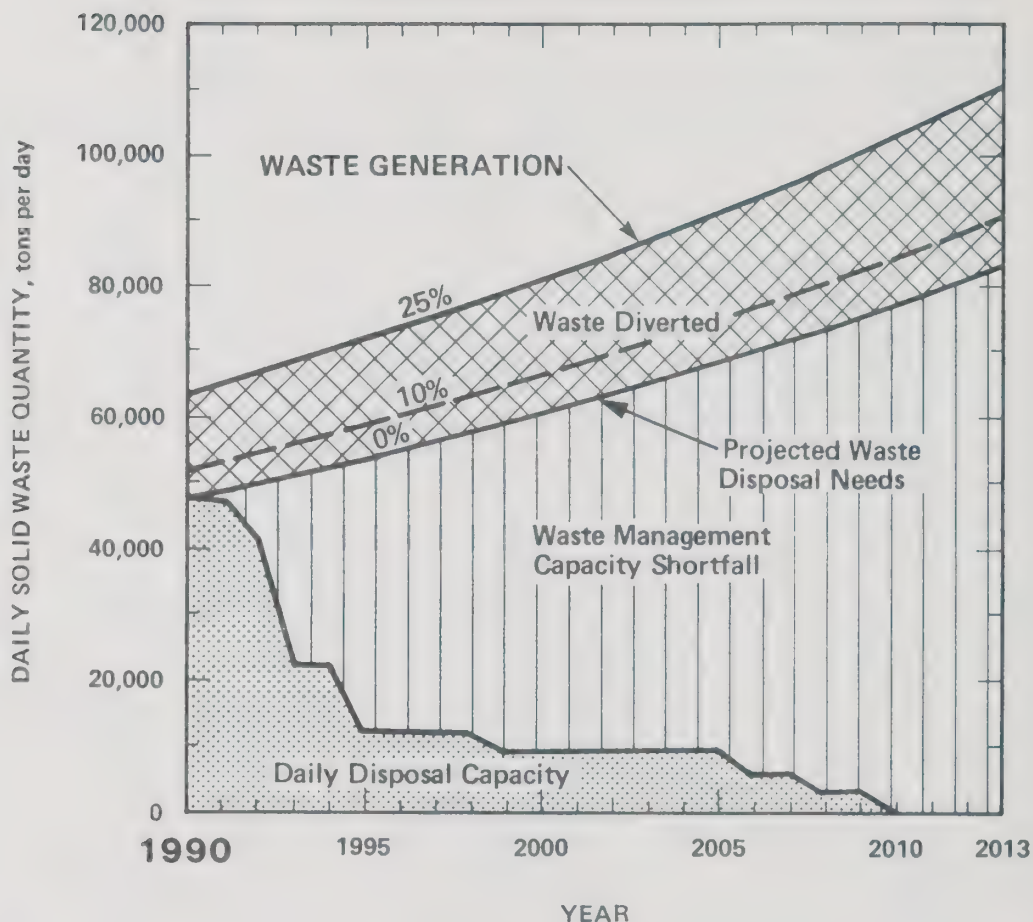


Figure 2-3 Los Angeles County Projected Solid Waste Disposal Tonnage



NOTES:

1. **WASTE GENERATION RATE:** THE SUM OF THE AMOUNT OF WASTE DIVERSION AND THE AMOUNT OF WASTE REQUIRING DISPOSAL. WASTE GENERATION IS ASSUMED TO INCREASE AT A RATE OF 1% PER YEAR DUE TO POPULATION GROWTH AND 1.5% PER YEAR DUE TO PER CAPITA INCREASES.
2. **WASTE DIVERTED:** THE QUANTITY OF WASTE GENERATION WHICH IS PROJECTED TO BE DIVERTED THROUGH RECYCLING AND REUSE EFFORTS. THE EXISTING LEVEL OF WASTE DIVERSION IS ESTIMATED TO BE BETWEEN 10 AND 25 PERCENT.
3. **WASTE MANAGEMENT CAPACITY SHORTFALL:** THE DIFFERENCE BETWEEN THE QUANTITY IN NEED OF DISPOSAL AND THE AMOUNT OF DAILY CAPACITY.
4. **DAILY DISPOSAL CAPACITY:** THE AMOUNT OF CAPACITY AVAILABLE AT THE 10 MAJOR CLASS III LANDFILL SITES IN L.A. COUNTY
5. **1990:** THE LAST YEAR THAT THE DAILY DISPOSAL NEEDS OF THE METROPOLITAN AREA CAN BE MET, ASSUMING NO INCREASES IN EXISTING RECYCLING LEVELS, NO EXPANSION OF EXISTING SITES, OR NO NEW SITES.

Source: Sanitation Districts, 1990.

Figure 2-4 Time-to-Crisis Analysis

minimum waste disposal shortfall of approximately 8,700 TPD can be expected to be experienced by the end of 1990, if additional landfill capacity is not provided, or if waste diversion efforts are not increased significantly.

2.4.2 Solid Waste Characterization

In the County, the municipal solid waste stream can be categorized by the waste source and by waste composition. Three major source classifications exist for municipal solid waste: residential, commercial/industrial, and construction/demolition. Each source classification represents approximately one-third of the total waste generated in the County.

In addition to categorizing solid waste by source, the composition of each source category can be characterized. This characterization provides information vital for planning waste diversion programs; that is, the identification of the potential quantity of recyclable/divertable materials present in the waste stream. The following sections discuss the composition of waste from each source category. It should be noted that dewatered sewage sludge, which originates from commercial and residential sources, can be managed as a nonhazardous solid waste, along with municipal solid waste, if certain operational requirements are met. These requirements are discussed in detail in Chapter 3, Project Description.

Residential Solid Waste Composition

Residential waste is defined for the purposes of this discussion as any waste originating from single- and multi-family dwellings. The largest components typical of residential waste include paper waste and yard and garden waste (green waste), with various other components including glass, food wastes, and plastics. Table 2-1 lists the various waste components and associated relative contributions to the residential waste stream.

Commercial/Industrial Solid Waste Composition

The commercial solid waste stream includes wastes from offices as well as wholesale and retail establishments. Industrial waste includes nonhazardous manufacturing and processing wastes from both light and heavy industrial business. The quantity and composition of commercial/industrial waste varies depending on the source (e.g., food waste from restaurants, paper waste from offices, etc.). Table 2-1 also lists the various waste components and associated relative contributions to the commercial/industrial waste stream.

Table 2-1 Countywide Average Waste Composition for Los Angeles County

Material	Percent of residential waste	Percent of commercial/industrial waste
Newspaper	8	2
Glass	7	7
Tin cans	4	5
Aluminum cans	1	1
Plastic (all types)	5	7
Leather/rubber/textiles	6	8
Scrap wood	5	12
Yard waste	30	5
Ceramics/stone	3	4
Garbage	6	5
Miscellaneous paper/cardboard	20	40
Miscellaneous	5	4
	100	100

Note: The residential and commercial/industrial waste represent 2/3 of the County's total wastestream, the construction/demolition waste makes up the other 1/3. The waste compositions presented here are estimates only based on historical data. Fulfillment of AB 939 requirements by cities and county will provide more accurate percentages of the waste composition in L.A. County.

Source: Solid Waste Management Status and Disposal Options in Los Angeles County, February 1988.

Construction/Demolition Solid Waste Composition

The construction/demolition waste stream includes wastes from razed buildings and other structures and from the construction, remodeling, or repair of buildings and structures. The composition of this waste is variable, but typically would include such mixed components as concrete, brick, stones, plaster, lumber, shingles, and discarded plumbing, heating, and electrical equipment. Due to the variability in the intensity and location of construction/demolition activity, the composition of this waste stream is difficult to characterize on a regional basis.

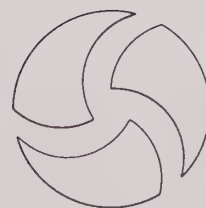
2.5 THE CALIFORNIA INTEGRATED WASTE MANAGEMENT ACT OF 1989 (AB 939)

AB 939, which became law January 1, 1990, establishes state-mandated local integrated waste management systems. The Act outlines a statewide hierarchy for such integrated waste management systems using priorities of (1) source reduction, (2) recycling and composting, and (3) environmentally safe land disposal and transformation (e.g., refuse-to-energy). The law requires that each city and county prepare a source reduction and recycling element of the integrated waste management plans, documenting the ability to achieve specified waste diversion goals of 25 percent by the year 1995 and 50 percent by the year 2000, or the greatest feasible amount a city or county may achieve. Each county is also required to develop a siting element to provide for the long-term disposal of wastes which cannot be diverted. A more detailed discussion of the law and its impact on the proposed Integrated System is included in Chapter 3, Project Description.

2.6 PURPOSE AND NEED FOR THE PROGRAM EIR

As discussed earlier, the Action Plan outlines key steps which must be taken in order to avert the solid waste disposal crisis. These include public education and awareness programs, materials recovery and recycling programs, expansion of existing landfills, and siting new landfills. These activities are best utilized as components of and within the context of a regional integrated solid waste management system. The purpose of this report is to conduct environmental analyses of the implementation of an Integrated System, thereby furthering the goals of the Action Plan. The scope includes regional environmental evaluation of waste diversion programs and potential existing site expansions and regional and local environmental impact analyses of potential new sites.

The State EIR Guidelines (Title 14, Chapter 3, Article 11, Section 15168) define a Program EIR as an EIR which may be prepared on a series of projects that are related geographically and have similar environmental effects which can be mitigated in similar ways. In sponsoring the Program EIR for the Integrated System, the County and the Sanitation Districts will facilitate a more exhaustive consideration of cumulative effects than would be practical in an EIR of an individual project, while affording the opportunity to evaluate impacts from individual components of the Integrated System. Further, it will allow for consideration of broad policy alternatives and program-wide mitigation measures at an early stage of the planning process and force the recognition of the regional implications of facility siting decisions. By virtue of the broad cross-jurisdictional impacts of many of the projects and programs comprising the Action Plan, the Program EIR will encourage the participation of all the governing bodies of the County, as well as the public. Lastly, as discussed in the State EIR Guidelines, a Program EIR will be most helpful in dealing with subsequent activities if it deals with the effects of the program as specifically and comprehensively as possible, thereby making additional environmental documentation unnecessary. Therefore, in the case of the three potential new landfill sites which are evaluated in detail from both a regional and local impact perspective, no further environmental documentation beyond this Program EIR will be required to move forward on permitting one or more of these sites.



CHAPTER 3

Project Description

CHAPTER 3

PROJECT DESCRIPTION

The purpose of this chapter is to provide a detailed description of the components of the proposed Integrated Solid Waste Management System (Integrated System) so that potential environmental effects resulting from the implementation of the Integrated System can be identified and fully analyzed.

3.1 OVERVIEW OF THE INTEGRATED SYSTEM

The proposed Integrated System includes waste diversion from landfills through source reduction, recycling and reuse; the expansion of existing landfill sites where appropriate; and the siting of new landfills in order to prevent a projected disposal capacity shortfall. An overview of the Integrated System is presented below. Sections 3.2, 3.3, and 3.4 provide a detailed description of each Integrated System component. Chapter 4 discusses the environmental impacts and mitigation measures related to implementation of the system.

3.1.1 Waste Diversion

The waste diversion component of the Integrated System includes:

1. Implementation of waste reduction (source) programs related to changes in both consumer purchasing and manufacturing/ packaging practices.
2. Support for adoption of legislation requiring manufacturing/ packaging changes.
3. Implementation of source separation programs throughout all areas of Los Angeles County to initiate residential and commercial/ industrial recycling programs.
4. Pursuit of materials recovery facilities capable of recovering recyclable materials from a mixed waste stream.
5. Recovery and recycling of certain materials brought to the landfill.

Responsibility for implementation of the waste diversion component of the Integrated System lies not only with the County of Los Angeles and the Sanitation Districts of Los

Angeles County (Sanitation Districts) but also with city governments within the County as well as each resident. This Program Environmental Impact Report (EIR) will present a menu of waste diversion programs which could be implemented throughout the County to meet the waste diversion goals of recently enacted state legislation (AB 939) and will also address the regional environmental effects associated with implementation of the waste diversion component of the Integrated System. Specific environmental impacts of individual programs are to be evaluated by the responsible party as such programs are implemented.

3.1.2 Expansion of Existing Landfills

Seven major landfills in the County have the potential to be expanded and continue to operate as part of the Integrated System. The seven sites, shown on Figure 3-1, are Azusa Western, Bradley West, Chiquita Canyon, Lopez Canyon, Scholl Canyon, Sunshine Canyon, and Puente Hills Landfills. The expansion of these sites, if technically and environmentally feasible, can be a major factor in resolving the projected waste management crisis. While repermitting and associated site specific environmental studies are the responsibility of the owner/operator of these individual sites, this Program EIR will address the regional impacts of whether or not these sites are repermited.

3.1.3 New Landfill Sites

In addition to the maximum implementation of waste diversion and expansion of existing sites, there is still a need to provide additional disposal capacity in the County. To address this component of the Integrated System, six potential new landfill sites located in Los Angeles County have been identified in the Action Plan (Blind Canyon, Browns Canyon, Elsmere Canyon, Mission-Rustic-Sullivan Canyons, Towsley Canyon, and Toyon Canyon II). As discussed in Chapter 2, these sites were the highest ranking sites from among 101 potential landfill locations evaluated in the Preliminary Alternate Site Study. New sites implemented in conjunction with the other components will provide sufficient disposal capacity to avert the impending crisis. Five of the six sites evaluated in this Program EIR are Blind Canyon, Browns Canyon, Mission-Rustic-Sullivan Canyons, Towsley Canyon, and Toyon Canyon II. Although originally identified as one of the six "best" potential sites, Elsmere Canyon is currently being developed by a private company, and a separate EIR/EIS is being prepared by the County Department of Regional Planning and the U.S. Forest Service. The locations of these sites are shown on Figure 3-1. Browns Canyon and Toyon Canyon II were determined to be infeasible after the preparation of the Program EIR had

begun. The Program EIR will thoroughly evaluate the potential environmental effects associated with the landfilling use of Blind, Mission-Rustic-Sullivan, and Towsley Canyons in sufficient detail and completeness so as to be able to proceed with the subsequent permitting of any one or all appropriate sites.

It is important to recognize that all of the components of the Integrated System are necessary in order to provide long term responsible solid waste management. Waste diversion activities alone will provide requisite long-term solid waste management. Waste diversion and expansion of the seven existing landfills with potential capability for expansion will not avert the crisis. Only implementation of all three major components, with participation from all responsible parties, will provide responsible solid waste management for the foreseeable future.

3.2 WASTE DIVERSION COMPONENT OF INTEGRATED SYSTEM

Of primary importance in implementing the Integrated System is the goal of diverting as much of the waste stream as feasible from landfill disposal. This can be accomplished in several ways including aggressive programs of source reduction, source separation and recycling, materials recovery at processing facilities, and recycling of materials at landfills. The extent to which markets are available for recovered materials is discussed on the market analysis report (Appendix C). This section presents discussions on the following elements considered necessary for successful implementation of the waste diversion component of the Integrated System:

- The requirements and impacts of the California Integrated Solid Waste Management Act of 1989 (AB 939) on solid waste management in the County.
- Waste diversion activities applicable to the residential, commercial/industrial, and construction/demolition portions of the waste stream, including the roles that various entities will need to play.
- Summary of the estimated diversion rates that could be achieved through aggressive waste diversion programs.

3.2.1 California Integrated Solid Waste Management Act of 1989 (AB 939)

To ensure that waste diversion is an integral part of waste management in the State of California, the State Legislature enacted AB 939, which became effective January 1, 1990. The



Figure 3-1 Location of Potential Landfills and Landfill Expansions

following discussion of AB 939 will focus on the provisions of the law related to waste diversion from landfilling and transformation facilities.

The purpose of AB 939 is to reduce, recycle, and reuse solid waste generated in the state to the maximum amount feasible. To ensure that this purpose is achieved on a statewide basis, each city or county is required to prepare and submit by July 1, 1991, a Source Reduction and Recycling Element (SRRE). The SRRE must identify source reduction, recycling, and composting activities and an implementation schedule to divert, by the year 1995, 25 percent of the total solid waste stream generated within the jurisdiction from landfill disposal. Furthermore, AB 939 requires each city or county to submit an updated SRRE within five years which identifies an implementation schedule for diverting 50 percent of the total waste stream from landfill disposal by the year 2000. This legislation also establishes penalties for cities and/or counties that do not submit plans or that do not implement the diversion programs specified in their plans. The California Integrated Waste Management Board will be responsible for administration and enforcement.

The Sanitation Districts have participated in several meetings recently with city staffs and elected officials concerning the new requirements placed on cities by the Integrated Solid Waste Management Act and the potential role that the Sanitation Districts could play in facilitating coordinated efforts among cities. Based on the input received and on a number of factors relevant to the AB 939 requirements, the Sanitation Districts are proposing the formation of 6 regional groupings of cities and unincorporated county areas to prepare coordinated SRREs. The Sanitation Districts are also committing up to \$1,000,000 to support the planning efforts of the regional group of cities. Additionally, the Sanitation Districts have initiated the preparation of two manuals to assist city groups in the preparation of the required SRREs. The first will deal exclusively with the waste characterization requirements of the SRRE. The second manual will cover all of the remaining components of the SRREs as amended by AB 1820, emergency legislation signed into law in June 1990. The purpose of these manuals is to provide clear and concise technical specifications for the preparation of the SRRE in a consistent manner acceptable to the CIWMB. The Sanitation Districts will continue to act as an advisor to cities in their progress towards meeting the goals of AB 939.

Historically, solid waste disposal trends have been used to estimate necessary disposal capacity requirements in Los Angeles County. (Chapter 2 discusses the details of current landfill disposal characteristics in the County and indicates

that the average daily landfill disposal rate for 1989 was approximately 47,000 tons per day (TPD)). Information on the amount of waste being disposed of has been readily available by surveying each disposal site. However, in order to comply with AB 939, each city or county will be required to characterize and quantify total solid waste generation within the jurisdiction. In other words, agencies must quantify both the amount of waste currently being recycled and reused and the amount disposed of at landfills. This will most likely require the jurisdiction to conduct waste characterization studies and waste audits to determine existing generation and recycling rates. Diversion rates will be measured from projected waste generation rates in 1995 and 2000. These projected rates are to be calculated for the amount of solid waste existing on the date the SRRE is approved, with adjustments for estimated changes in population and commercial/industrial activity.

For the purpose of determining the solid waste generation rate from which recycling levels should be calculated, AB 939 defines solid waste as (1) materials in the waste stream which are normally disposed of at a landfill or transformation (e.g., refuse-to-energy) facility and (2) material diverted from a landfill or transformation facility through all existing residential, commercial, and industrial source reduction, recycling, or composting activities. AB 939 defines recycling as "the process of collecting, sorting, cleansing, treating, and reconstituting materials that would otherwise become solid waste, and returning them to the economic mainstream in the form of raw material for new, reused, or reconstituted products which meet the quality standards necessary to be used in the marketplace."

In order to achieve the very aggressive waste diversion goals of AB 939, it will be necessary to develop a number of new and innovative programs that will reduce or divert material presently going to the landfills. As discussed in Chapter 2, the waste stream can be categorized by three sources of generation: (1) residential, (2) commercial/industrial, and (3) construction/demolition. The following sections present programs, categorized by the source of waste, that could be implemented throughout the County and the impact these programs could have toward meeting AB 939 goals.

3.2.2 Residential Waste Stream

This section reviews the various methods for reducing the amount of the residential waste stream. A discussion is included on source reduction, source separation and recycling, and green waste recovery programs.

Source Reduction

The most effective way to reduce the amount of waste requiring disposal is through source reduction. Probably the most important factor in source reduction efforts is consumer awareness and education. A recent Environmental Protection Agency (EPA) report, Promoting Source Reduction and Recyclability in the Marketplace (USEPA September 1989),¹⁰⁵ identifies several programs that can be effective in enhancing consumer education and awareness including:

- High-quality advertising techniques that present messages on the advantages of environmentally based purchasing decisions.
- Standardized labeling and definitions that are readily understood by consumers.
- Publishing information and data on products and packaging that promote source reduction and recyclability.

To help promote consumer education and awareness of disposal decisions, the Sanitation Districts are involved in several public information programs. The Sanitation Districts have sponsored exhibits at the Los Angeles County Fair and the Los Angeles County Museum of Science and Industry. Additionally, the Sanitation Districts are in the process of developing along with other public agencies a recycling and solid waste disposal curriculum to be used by elementary school teachers.

Seven instructional units on the environment for grades kindergarten through six will be developed. Each unit will provide at least four days of instruction and will consist of a teacher guide, posters, study cards, and other teacher materials, and student exercises, tests, and home activity sheets. Two videos will also be developed, one for K through third grade level and one for four through six grade level. The curriculum will combine many facets of the environment, including air quality, water quality, waste management and resource preservation.

The above-mentioned EPA report also presents activities for consumers to promote source reduction and recycling including:

- Purchasing products in packaging that promotes source reduction and recyclability.
- Conducting or participating in campaigns designed to educate the consumer.

- Writing manufacturers about preferences and/or dissatisfactions with product packaging.
- Reviewing and commenting on government and industry proposals for labeling schemes and legislation.

Source reduction requires changes in manufacturing and packaging and changes in consumer habits. Source reduction in industry could be achieved by decreasing the amount of materials used in packaging and/or development of products which are reusable or recyclable. In turn, consumer habits must change to include the purchase and use of such products. Source reduction efforts require long term changes in existing consumer practices and manufacturing processes, making it difficult to quantify the impact the steps outlined above could have on reducing the waste stream.

A measure that cities can directly implement to encourage source reduction involves changes to the refuse collection fee structure. Information from municipalities that have established a "per container" fee for waste collection services indicates that residents are more likely to sort out their recyclables and yard waste for separate collection thereby reducing the amount of waste requiring disposal. In a "per container" collection fee structure, for example, the resident that placed out two containers for disposal is charged more than the resident that only places out one container. A similar program could be implemented by cities in the County to provide an incentive for residents to reduce the amount of waste going to the landfills.

Source Separation and Recycling

The most efficient method of removing recyclables from the residential waste stream is through source separation programs. Such programs require the resident to separate those materials targeted for recovery from the remainder of their trash. Both city governments and the private waste collection industry must take the lead to implement residential curbside collection programs. As recommended in the Sanitation Districts report, Residential Source Separation Feasibility in Los Angeles County (September 1987), a combination of buy-back centers, drop-off centers, and mandatory curbside collection will most likely allow for the greatest diversion, and give all residents a chance to participate in a program of their choice.

Buy-back and drop-off centers require residents to separate certain recyclables and deliver them to the center. At a buy-back center, residents are paid for their recyclables, based on the current market and redemption value of the materials. A drop-off center is usually maintained by a community service

organization and instead of paying residents for their recyclables, uses the money to help support the organization. Curbside collection programs make it possible for the resident to set their recyclables out at the curb but usually require the resident to pay for the added cost of collection, since the market revenue from the sale of recyclable materials does not always offset the cost of collection.

Materials typically targeted for recovery from a residential source separation program include newspaper, glass containers, aluminum and tin cans, and plastic P.E.T. beverage containers. These materials are usually identified as "readily recyclables" because of established markets for their end use. The "readily recyclables" portion of the residential waste stream accounts for approximately 7 percent of the total waste stream that now goes to landfills for disposal. Probably the single most important factor that makes the collection of "readily recyclables" feasible is the implementation of the "bottle bill" (AB 2020). Under AB 2020, most beverage containers are subject to a redemption value, thereby creating a guaranteed value for the recovered material and making it more economical for cities and individuals to segregate and recycle beverage containers.

In order for residential source separation and recycling to be a major factor in diverting material from landfills, residential programs must be established in all areas of the County. The responsibility of establishing programs lies with the individual city councils in incorporated areas, and with the County Board of Supervisors in unincorporated areas of the County. Five years ago, only five cities in the County had residential curbside recycling programs. Approximately 30 out of 88 cities in the County have curbside recycling programs and an estimated 28 more cities have programs in the planning stages. Within the unincorporated areas of the County, the County Department of Public Works has instituted curbside recycling programs in several unincorporated areas with plans to extend the programs into other areas. Effective January 1, 1990, a County ordinance requires solid waste collectors operating within these areas to provide recycling collection services to all single-family residents. Residents in other unincorporated areas of the County will subsequently have curbside recycling services provided to them.

Green Waste Recovery Programs

Yard and garden waste also has a very high potential to be diverted from disposal through implementation of green waste recovery programs. Green waste, which consists of leaves, brush and tree trimmings, grass clippings, and other vegetative matter found in the residential waste stream, represents

approximately 30 percent of the residential (10 percent of the total) waste stream in the County and has been identified in the Action Plan as a material targeted for diversion to beneficial uses. Although activities such as backyard composting can be promoted to encourage the recycling of green waste found in the residential waste stream, this is a course of action that could have potential odor and vector impacts if not properly controlled. Therefore, cities may prefer to be responsible for separate collection and diversion of this material to community composting facilities, where potential impacts could be more easily controlled. This would require cities to separately collect the green waste (to avoid contamination from the remainder of the household refuse), shred it to a size suitable for composting, and maintain the composting operation. The composted material could then be made available to the residents for home use or put to use in city landscaping programs.

Due to the substantial land area requirements of a composting operation and the uncertainties of markets for the continuous large volumes of compost that would be generated, other uses should also be analyzed. The Sanitation Districts have developed an alternative use for large quantities of green waste at their landfills. Three Sanitation Districts operated landfills (Puente Hills, Scholl Canyon, and Calabasas Landfills) currently divert incoming loads of uncontaminated green waste, which are shredded and used to meet a portion of the daily cover material requirements at the sites. The green waste cover program focuses on diverting loads of green waste brought to the site by landscapers and city tree trimming crews. It is estimated that approximately one-third of the residential green waste is brought to the landfills in this manner. The remaining residential green waste is typically collected with other residential waste and cannot be easily segregated at the landfill. In order to divert this fraction to a beneficial use, it would be necessary for cities to implement separate collection programs and direct it to a green waste cover program or composting, as discussed above. To encourage separate collection, a discounted tipping fee has been established for all loads of uncontaminated green waste delivered to those three sites. Another identified potential use for green waste is its application as a soil conditioner to aid revegetation efforts of degraded soils. A report prepared by the Department of Landscape Architecture, California State Polytechnic University, Pomona, entitled Regeneration of Degraded Landscapes Utilizing Composted Organic Waste, (June 1988) identifies several locations throughout the County where such applications should be considered.

Other Components of the Residential Waste Stream

Other components of the residential waste stream that have the potential to be recovered and recycled include mixed paper and cardboard and various plastics and can collectively account for approximately 25 percent of the residential (8 percent of the total) waste stream. Since recovered materials are of little or no value if they have been contaminated by wet garbage, the ability to recover and recycle mixed paper and cardboard, and plastics would depend on the method of collection. Residents could be asked to place these items in separate containers that would be collected at the same time as "readily recyclables" and then processed to specifically separate all recyclable materials. However, markets are not at all certain for these materials, and the actual extent to which these portions of the residential waste stream could feasibly be diverted from landfills is not presently known.

3.2.3 Commercial/Industrial Waste Stream

Source reduction and recycling, and materials recovery and processing facilities are discussed in this section as ways to reduce disposal quantities from the commercial/industrial waste stream.

Source Reduction, Source Separation, and Recycling

In order for source reduction to be effective in reducing daily disposal quantities from the commercial/industrial waste stream, businesses, industries, and manufacturers must focus their attention on designing products that can be recycled and are made from recyclable materials. Additionally, products should have a minimal amount of packaging material.

Legislation will also play an important role in encouraging commercial/industrial source reduction and recycling. Recent state legislation allows for tax credits on certain equipment associated with recycling materials. Additionally, government agencies are required to give preference to purchasing and using products made from recycled materials.

The consumer also has a role in encouraging manufacturers to develop recycled/recyclable products. This role is probably best expressed in the purchasing power of the consumer. If consumers purchase products that are recyclable and/or are made from recyclable materials, manufacturers will be more inclined to produce these products.

Recovery of recyclable materials through commercial/industrial source separation programs is extremely complex. Unlike residential collection programs that are typically

conducted either by city forces or through a city issued contract, refuse collection from commercial/industrial sources is accomplished in a variety of ways from numerous private enterprise collectors. Due to this arrangement, it is very difficult to identify businesses that are segregating and recycling materials, and little is known about the quantities of materials currently being diverted from landfill disposal. It is reasonable to assume that many commercial businesses generating significant quantities of recyclable materials are in fact recovering and recycling them. Examples of recycling activities taking place in the commercial sector include grocery markets that separate and recycle cardboard boxes, restaurants that recycle their glass containers, and office buildings that have paper recycling programs. However, it can also be assumed, as evidenced by waste stream characterization studies done at disposal sites, that many commercial/industrial businesses do not recover their recyclables. It should also be noted that companies that do recycle may only do so if the economic conditions are such that a relatively high price for the segregated material will be received.

Methods of encouraging and facilitating commercial/industrial sources to establish source separation and recycling programs could be developed through permit conditions by local government. Such conditions could require new developments of commercial or industrial properties to implement office recycling programs for collection of white office paper, computer paper, and cardboard. Additionally, when issuing new building permits, plans could be required to include additional space on the premises for recycling bins to accommodate the material collected through these programs.

The commercial/industrial waste stream also contains approximately 6 percent green waste (or 2 percent of the total waste stream) that could be diverted to a composting or landfill cover program. To divert this material, it would be necessary for persons providing landscaping services to businesses to separately collect the green waste in a manner that keeps out other trash and contaminants and to divert these loads to a green waste program similar to that described for the residential sector.

Materials likely to be targeted for recovery from the commercial/industrial waste stream through source separation programs include cardboard, mixed paper, plastics, wood, green waste, and metals. This fraction of the commercial/industrial waste stream can account for approximately 70 percent of the commercial/industrial waste stream (23 percent of the total waste stream).

Materials Recovery and Processing Facilities

Although not as efficient as source separation programs, materials recovery and processing facilities also have the potential to recover recyclables from a mixed commercial/industrial waste stream. This is because commercial/industrial waste stream varies significantly in composition from the residential waste stream and collection routes can be structured to reduce contamination of loads that contain significant amounts of recyclables.

In the following discussion, a waste processing facility with the sole purpose of recovering recyclable materials, such as cardboard, mixed paper, and plastics from the waste stream will be termed a "materials recovery facility" (MRF). At such a facility, mixed waste is processed manually and mechanically to remove materials suitable for recycling.

Materials targeted for recovery from the commercial/industrial waste stream at a MRF could include the same materials identified for recovery through a source separation program: old corrugated cardboard (OCC), different types of paper (computer, white office, and other mixed), plastics (film, high-density polyethylene (HDPE), polyvinyl chloride (PVC)), ferrous and nonferrous metals, and wood waste.

To further assess the feasibility of operating MRFs in Los Angeles County, the Sanitation Districts are proposing to construct and operate a 600 TPD capacity research and development facility. The proposed facility would be designed primarily to evaluate the recovery of materials from commercial/industrial loads (with high percentages of recyclables) versus mixed waste loads. Appendix D presents a more complete discussion of the processing techniques that would most likely be utilized in the proposed facility. An evaluation of suitable sites for this facility is currently under way.

3.2.4. Construction/Demolition Waste Stream

The construction/demolition waste stream is the third major source of waste in the County that contains significant quantities of materials with the potential for recovery at landfills and diversion to beneficial uses. Although increases in source separation efforts are still necessary, a number of potentially reusable or recyclable materials are already received in relatively pure loads at the landfill and can be segregated from other waste received at the site. Some of these materials such as asphalt and dirt can be reused on site, while other materials such as wood have the potential to be segregated at the landfill and diverted to off-site uses such as energy recovery. It is estimated that asphalt and wood

found in the construction/demolition waste stream account for approximately 2 and 6 percent of the total waste stream, respectively.

Several options can be considered for recycling and/or reusing asphalt. As reported by the Asphalt Institute, recycling of asphalt pavement can be both cost effective and environmentally beneficial. Many asphalt pavements can be recycled during roadway reconstruction or removed and delivered to an asphalt plant for processing. To encourage asphalt pavement recycling, agencies issuing roadway reconstruction contracts should require the removed pavement to be recycled. In cases where the pavement is not suitable for recycling, the potential exists to reuse it at local landfills. Sanitation Districts operated landfills divert approximately 800 TPD of asphalt pavement, which is used on site to create wet weather operation areas and temporary roadways.

The construction/demolition waste stream also contains a significant amount of wood debris that has the potential to be diverted from landfilling. Probably the largest single use for this wood waste is as a fuel source. It is unlikely that uses of wood wastes for fuel would be developed in the Los Angeles air basin due to air quality control concerns. Therefore, markets outside of the area would have to be relied upon. Although significant quantities of wood waste are presently being diverted to cogeneration energy facilities in central and northern California, the potential exists for greater diversion. To accomplish this, it would be necessary to develop collection and/or processing systems capable of providing "uncontaminated" (free of plastics and metals) wood sources.

3.2.5 Impact of Waste Diversion on Time-To-Crisis Analysis

In Los Angeles County, a significant amount of solid waste is already being recycled. However, because most of the recycling is being conducted by private enterprises from commercial/industrial sources, it is difficult to quantify. When each city completes the Source Reduction and Recycling Element (due by July 1, 1991), an accurate estimate of the current Countywide level of recycling can be determined. Based on preliminary estimates by the County Department of Public Works and the City of Los Angeles Bureau of Sanitation, it is estimated that the current level of recycling in Los Angeles County is between 10 and 25 percent. For the purposes of this Program EIR, an assumed rate of existing recycling of 10 percent will be used to evaluate the types of programs needed to achieve AB 939 goals of 25 and 50 percent diversion. The potential regional environmental effects of implementing the necessary programs will be discussed as well in Chapter 4.

Assuming that approximately 10 percent of the municipal solid waste generated in Los Angeles County is currently being recycled, it is predicted that a waste management capacity shortfall could occur as early as 1991 if there are no increases in waste diversion or no new capacity is permitted. The first step to avoiding a capacity shortfall will be to increase levels of waste diversion by beginning implementation of many of the waste diversion programs previously described.

To achieve the first goal of AB 939 (25 percent diversion by 1995), source reduction and recycling levels will have to increase by two and one-half times over the assumed existing level of 10 percent. Since any one particular program will not likely be 100 percent effective, it will take a combination of programs to meet the 1995 diversion goal. Source reduction, curbside collection of readily recyclables, and green waste, asphalt, and wood recycling will probably be the programs chosen because of established methods and markets.

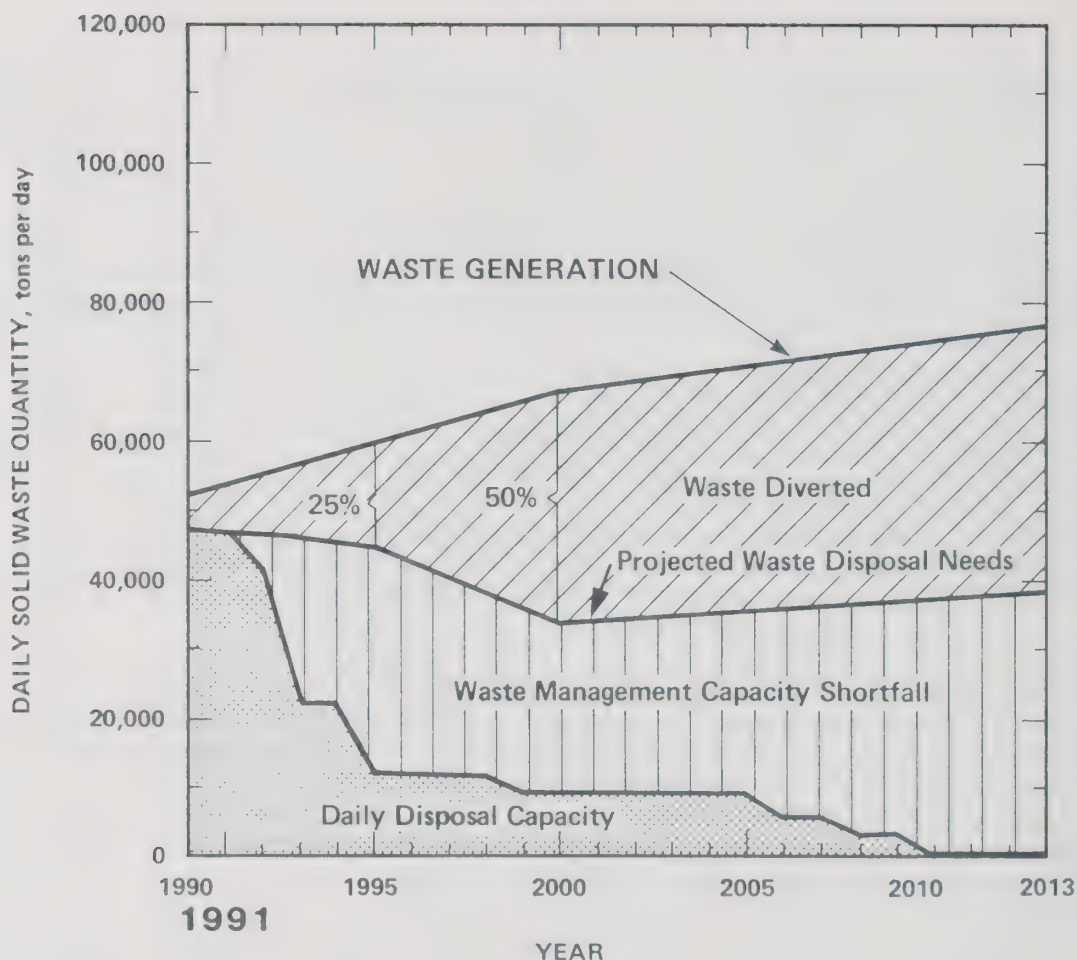
In order to achieve the next level of diversion goals, 50 percent by the year 2000, it will be necessary to divert additional materials that were not previously considered. It is believed that utilization of materials recovery facilities as discussed in Section 3.2.3 could play a significant role in increasing the amount of material diverted from the residential and commercial/industrial waste streams.

Figure 3-2 assumes an existing recycle rate of 10 percent which would increase to 50 percent of the total waste generated in the year 2000. To achieve the year 2000 goal, the amount of waste diverted would have to increase from approximately 5,000 TPD (assuming a 10 percent existing level) to almost 34,000 TPD in the year 2000.

Although implementation of various waste diversion programs are important and can have a significant and positive impact on waste management in Los Angeles County, there will still be a need for additional disposal capacity, as indicated by Figure 3-2. The following sections discuss how the expansion of existing sites and the development of new sites can satisfy this shortfall.

3.3 EXPANSION OF EXISTING LANDFILLS COMPONENT OF INTEGRATED SYSTEM

Expansion and permit renewal of existing landfills is the second component of the Integrated System. Seven major Class III landfills in Los Angeles County are capable of undergoing expansion and/or permit renewals. The site specific environmental analyses for these landfill expansions and permit



NOTES:

1. **WASTE GENERATION RATE:** THE SUM OF THE AMOUNT OF WASTE DIVERSION AND THE AMOUNT OF WASTE REQUIRING DISPOSAL. WASTE GENERATION IS ASSUMED TO INCREASE AT A RATE OF 1% PER YEAR DUE TO POPULATION GROWTH AND 1.5% PER YEAR DUE TO PER CAPITA INCREASES, TO THE YEAR 2000. AFTER THE YEAR 2000, IT IS ASSUMED THAT NO PER CAPITA INCREASES IN WASTE GENERATION OCCUR DUE TO SOURCE REDUCTION EFFORTS RESULTING FROM AB 939 PROGRAMS.
2. **WASTE DIVERTED:** THE QUANTITY OF WASTE GENERATION WHICH IS PROJECTED TO BE DIVERTED THROUGH RECYCLING AND REUSE EFFORTS. FOR THE PURPOSES OF THIS ANALYSIS THE EXISTING LEVEL OF WASTE DIVERSION IS ESTIMATED TO BE 10 PERCENT.
3. **WASTE MANAGEMENT CAPACITY SHORTFALL:** THE DIFFERENCE BETWEEN THE QUANTITY IN NEED OF DISPOSAL AND THE AMOUNT OF DAILY CAPACITY.
4. **DAILY DISPOSAL CAPACITY:** THE AMOUNT OF CAPACITY AVAILABLE AT THE 10 MAJOR CLASS III LANDFILL SITES IN L.A. COUNTY
5. **1991:** THE LAST YEAR THAT THE DAILY DISPOSAL NEEDS OF THE METROPOLITAN AREA CAN BE MET, ASSUMING NO INCREASES IN EXISTING RECYCLING LEVELS, NO EXPANSION OF EXISTING SITES, OR NO NEW SITES.

Source: Sanitation Districts, 1990

Figure 3 -2 Effect of AB 939 Waste Diversion Goals on Time-to-Crisis Analysis

renewals are the responsibility of the operator/owner of these sites. This section identifies those sites capable of expansion and the status of any proposed expansions.

3.3.1 Location of Potential Expansion Landfills

Figure 3-1 shows the location of the seven major Class III landfills with the potential to be repermited and expanded. These include the Azusa Western, Bradley West, Chiquita Canyon, Lopez Canyon, Puente Hills, Scholl Canyon, and Sunshine Canyon Landfills.

3.3.2 Status of Potential Expansions

The status of the seven landfill expansion projects is summarized in Table 3-1. Together these seven landfills receive between 30,000-34,000 TPD as shown in Table 3-1. If these sites are not permitted for expansion, the result will be a short term disposal crisis and, in the long term, a much greater need for and higher daily operating levels required at potential new disposal sites.

Azusa Western Landfill

Browning-Ferris Industries (BFI) owns and operates the Azusa Western Landfill. The site is located in a gravel pit southeast of the 605 and 210 Freeways in the cities of Azusa and Irwindale. Recently, Azusa Western Landfill was expanded by 37 million tons, with a maximum daily limit of 6,500 tons per day. However, due to operational constraints it is estimated that the site will average over the long term approximately 3,500 tons per day. There is additional expansion capacity of approximately 4 million tons that would require a land use permit from the City of Irwindale. Figure 3-3 shows a view of this site looking toward the southeast.

Bradley West Landfill

Bradley West Landfill is located in the City of Los Angeles in the Sun Valley area. The site is owned and operated by Waste Management Inc. and is permitted to accept 7,000 TPD. However, due to operational constraints, it presently accepts approximately 3,000 TPD. This site is located in a former gravel pit. While the landfill is fully permitted for approximately 17 million tons of capacity, the land use permit expires in 1993. A new permit would be required to utilize the capacity remaining after 1993. Figure 3-4 shows a view of this site looking toward the south.

Table 3-1 Status of Landfill Expansion Projects

Site	Owner/operator	Current waste flow, TPD	Approximate closure date	Expansion status
Azusa Western	Browning Ferris Industries (BFI) ^f	3,000 - 6,500	2017	Permit renewal obtained from the City of Azusa for 37 million tons in late 1989. Approximately 4 million tons of expansion capacity remains after the 37 million tons is exhausted.
Bradley West	Waste Management, Inc. ^a	3,000 - 7,000	1993	Permit renewal. Eleven million tons approved capacity approved capacity remaining. Existing permit must be renewed in 1993. Estimated closure date is 2003. Site capacity will then be exhausted.
Chiquita Canyon	Laidlaw Waste Systems ^c	3,000 - 6,000	1991 to 1992	Proposed expansion of 30 million tons. EIR being prepared. Estimated closure date would be 2002 to 2004.
Lopez Canyon	City of Los Angeles ^d	3,000 - 4,000	1990	Proposed expansion of 22 million tons with an estimated life to 2005. Draft EIR submitted 11/88. Conflict with the CIWMB over present operation may restrict waste inflow. Final EIR under review.
Puente Hills	Sanitation Districts ^e	12,000	1993	16 million ton capacity remains. Upcoming expansion proposal of 75 million tons with an estimated closure date of 2013.
Scholl Canyon	Sanitation Districts ^e	2,500 - 3,500	2004	Future expansion for additional 6 million ton capacity. Estimated closure date would be 2011-2012.

Table 3-1 Status of Landfill Expansion Projects (continued)

Site	Owner/operator	Current waste flow, TPD	Approximate closure date	Expansion status
Sunshine Canyon	BFI ^g	4,000 - 8,000	1991	6 million ton capacity remains. Proposed expansion of 215 million tons (12,000 to 14,000 TPD). Estimated closure date would be 2040. EIR process ongoing.

^aSite permitted to receive up to 7,000 TPD, but waste flow is restricted due to liner installation. Installation expected to be completed in 9/90. WMI will then decide what waste flow to take.

^bSource: Mr. Greg Loughnane, WMI, July 26, 1989.

^cSource: Mr. Sam Sambo and Mr. Frank Nicherbacker, Laidlaw Waste Systems; and Mr. Rod Welder, EMCON, July 24 to August 4, 1989.

^dSource: Mr. Jeff Dubrowski, City of Los Angeles, July 24 to August 1, 1989.

^eSource: Sanitation Districts, July 25, 1989.

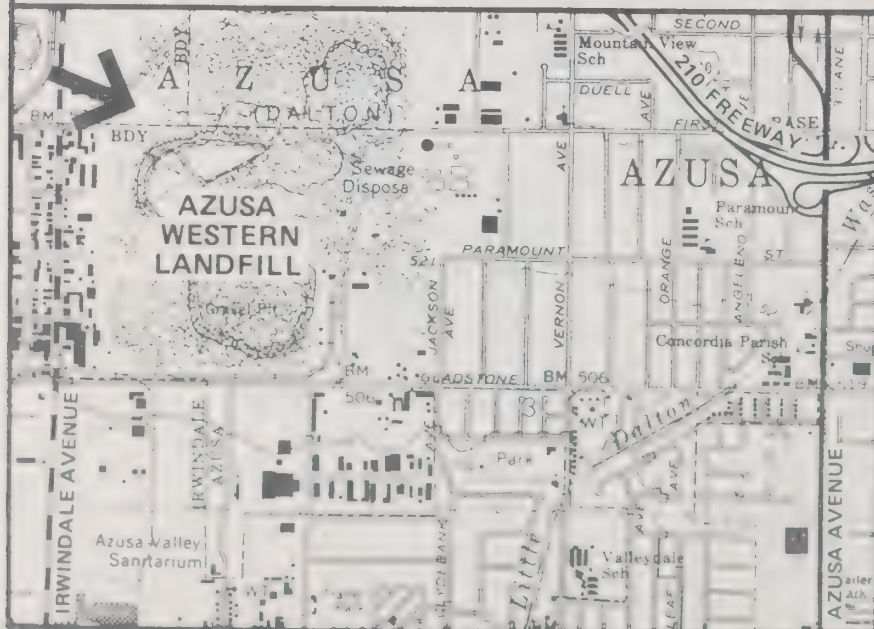
^fSource: Mr. Rick Spencer, BFI, July 25, 1989 and Ms. Cristian Brame, June 12, 1990.

^gSource: Mr. Dean Wise, BFI, July 25, 1989.

^hSolid waste from the City of Los Angeles is restricted.



PANORAMIC VIEW OF AZUSA WESTERN LANDFILL



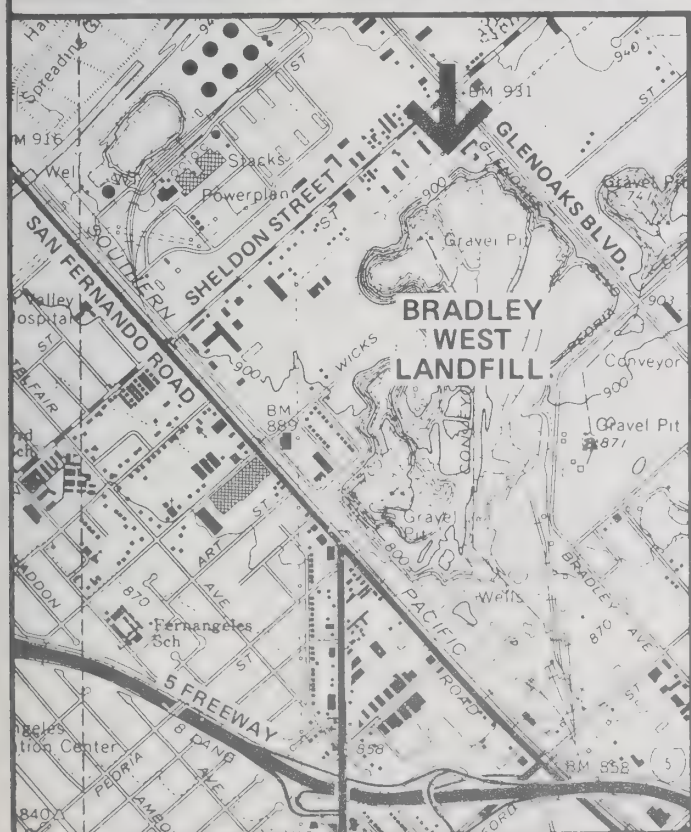
U.S.G.S. MAP,
BALDWIN PARK
QUADRANGLE, 1966.
PHOTOREVISED 1981.

Source:
Sanitation Districts, 1990.

Figure 3-3 View of Azusa Western Landfill



PANORAMIC VIEW
BRADLEY WEST LANDFILL



U.S.G.S. MAP,
VAN NUYS QUADRANGLE, 1966.
PHOTOREVISED 1972.

Source: Sanitation Districts, 1990.

Figure 3-4 View of Bradley West Landfill

Chiquita Canyon Landfill

Chiquita Canyon Landfill is located in the unincorporated County area at the western edge of the Santa Clarita Valley and north of Highway 126. This site is owned and operated by Laidlaw Waste Industries and currently receives between 3,000 and 6,000 TPD. The land use permit for this site will expire in 1991, and the owner has filed a permit application for the expansion with the County Department of Regional Planning. The expansion capacity would be approximately 30 million tons. Environmental studies are being prepared at this time. Apparently, the owner will also request an increase of up to 10,000 TPD in the operating level at the site. Figure 3-5 shows a view of the site looking towards the northwest.

Lopez Canyon Landfill

The Lopez Canyon Landfill, owned and operated by the City of Los Angeles, is located in the northern portion of the City in the Western San Gabriel Mountains. The site has been in operation since 1975 and currently receives an average of approximately 4,000 TPD. All the waste received at this site is generated and collected by the City. No private haulers are allowed access to this landfill. The City Bureau of Sanitation is currently completing the environmental documents necessary to apply for the expansion of the site. A Draft Subsequent Environmental Impact Report (SEIR) was released for public review in December 1988. A draft Final SEIR was released for public comment in August, 1989, and the Final SEIR was approved by the City Board of Public Works in late April 1990, and is currently before the City Planning Commission.

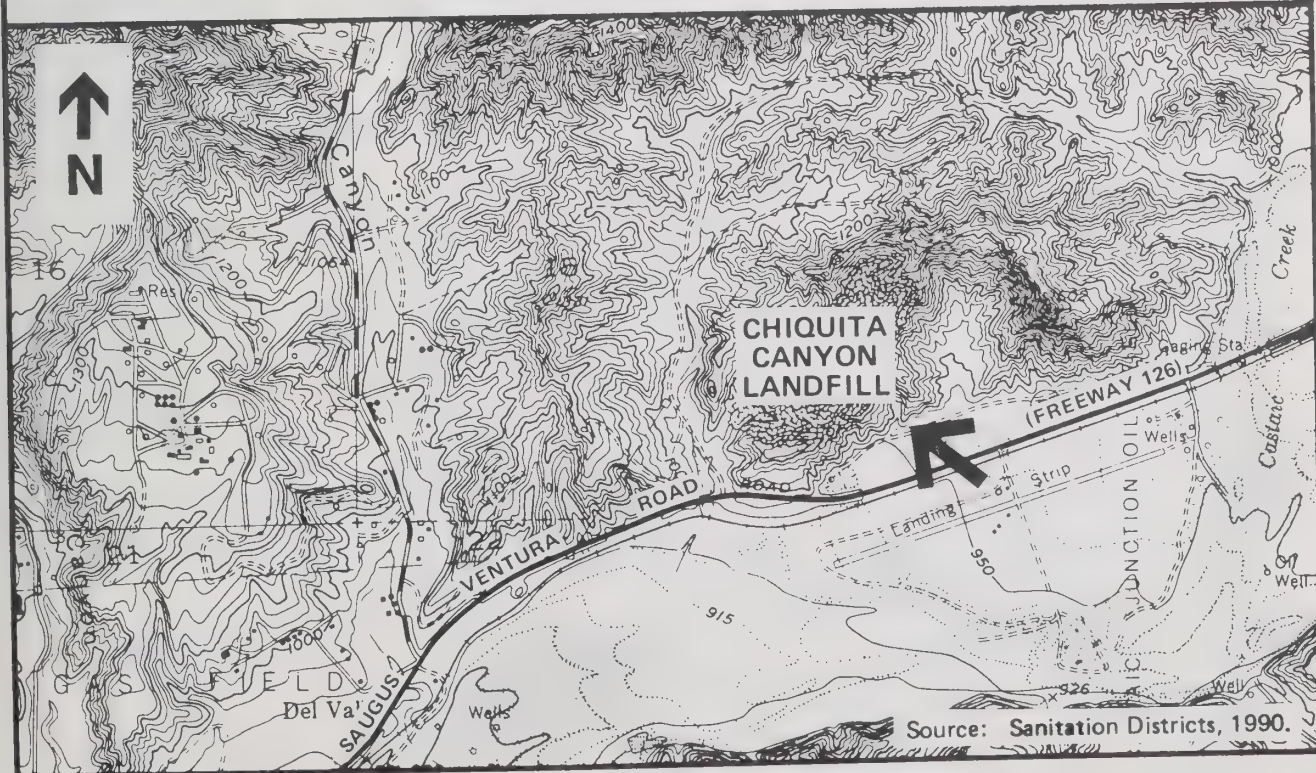
The Final SEIR discussed an expansion that would accommodate 21.7 million tons of waste and would also increase the operating level at the site to 7,200 TPD. Approximately 3.5 million tons remain at the site if the expansion is not approved. The City of Los Angeles is the local land use jurisdiction. Figure 3-6 shows a view of this site looking toward the southwest. Under a Joint Powers Agreement between the County and City of Los Angeles, if Elsmere Canyon is permitted as a landfill and purchased by the City and County, Lopez Canyon Landfill would be closed one year after Elsmere Canyon Landfill begins operation.

Puente Hills Landfill

The Puente Hills Landfill located southeast of the 60 freeway and 605 freeway is owned and operated by the Sanitation Districts. The site is restricted by its land use permit from receiving more than an average 12,000 TPD during a



PANORAMIC VIEW OF CHIQUITA CANYON LANDFILL



U.S.G.S. MAP, VALVERDE QUADRANGLE 1952. PHOTOREVISED 1988.

Figure 3-5 View of Chiquita Canyon Landfill



PANORAMIC VIEW
LOPEZ CANYON LANDFILL



U.S.G.S. MAP,
SAN FERNANDO
QUADRANGLE 1966.
PHOTOREVISED 1972.

Source:
Sanitation Districts, 1990.

Figure 3-6 View of Lopez Canyon Landfill

6-day week. The site, originally privately owned, has been in operation since 1957. The Sanitation Districts purchased the site in 1970. Refuse from portions of the City of Los Angeles outside of the Sanitation Districts (approximately 95 percent of the City) is not allowed to be disposed of at this site. The landfill is currently operating under a 10-year land use permit, which expires November 1, 1993.

A Final EIR was certified by the Sanitation Districts Board of Directors in 1983, which proposed a 106-million-ton fill capacity. Approximately 75 million tons of capacity will be remaining when the current permit expires. The Sanitation Districts will be beginning the necessary supplemental environmental analyses on this expansion of the Puente Hills Landfill in 1990. Figure 3-7 shows the view of this site looking towards the southwest.

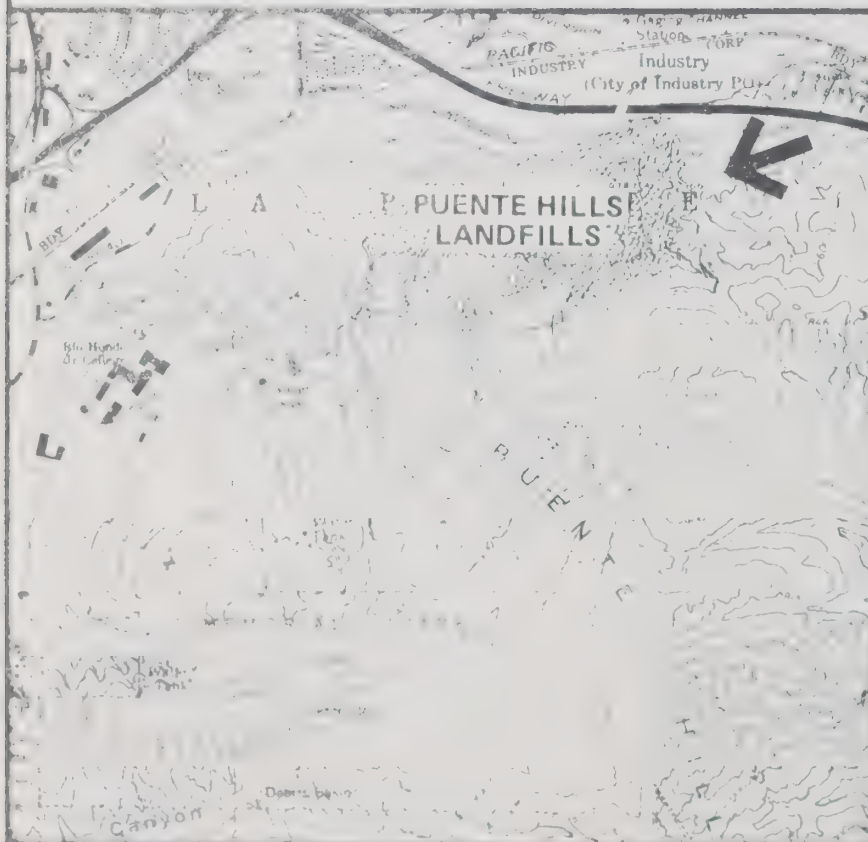
Scholl Canyon Landfill

The Scholl Canyon Landfill located north of the Ventura Freeway is owned by the City of Glendale and operated by the Sanitation Districts under a Joint Powers Agreement. The site averages 2,500 TPD with a maximum permitted level of 3,500 TPD. Tonnage received at the site is restricted by City of Glendale Ordinance to only that which originates in the cities of: Glendale, Pasadena, La Canada-Flintridge, San Marino, Sierra Madre, South Pasadena, and unincorporated areas of Los Angeles County--Altadena, La Crescenta, Montrose, and East Pasadena.

The current local land use permit for this site, issued by the City of Glendale in 1978, allowed for placement of an additional 25 million tons of refuse. It is estimated that this permitted capacity will be exhausted by the year 2008. Approximately 6 million tons of additional capacity could be available. It is anticipated that the City of Glendale will pursue this expansion. Figure 3-8 shows a view of this site looking towards the southeast.

Sunshine Canyon Landfill

Browning-Ferris Industries (BFI) owns and operates the Sunshine Canyon Landfill. The operating portion of the site is located in the northwest portion of the City of Los Angeles immediately west of Interstate 5. Sunshine Canyon Landfill receives between 5,000 and 7,000 TPD. The landfill is permitted to September 1991. BFI has applied to the County to expand the landfill into a portion of the site located in unincorporated Los Angeles County. The expansion capacity applied for is 70 million tons. A Draft EIR circulated in April 1989 identifies the total capacity at the



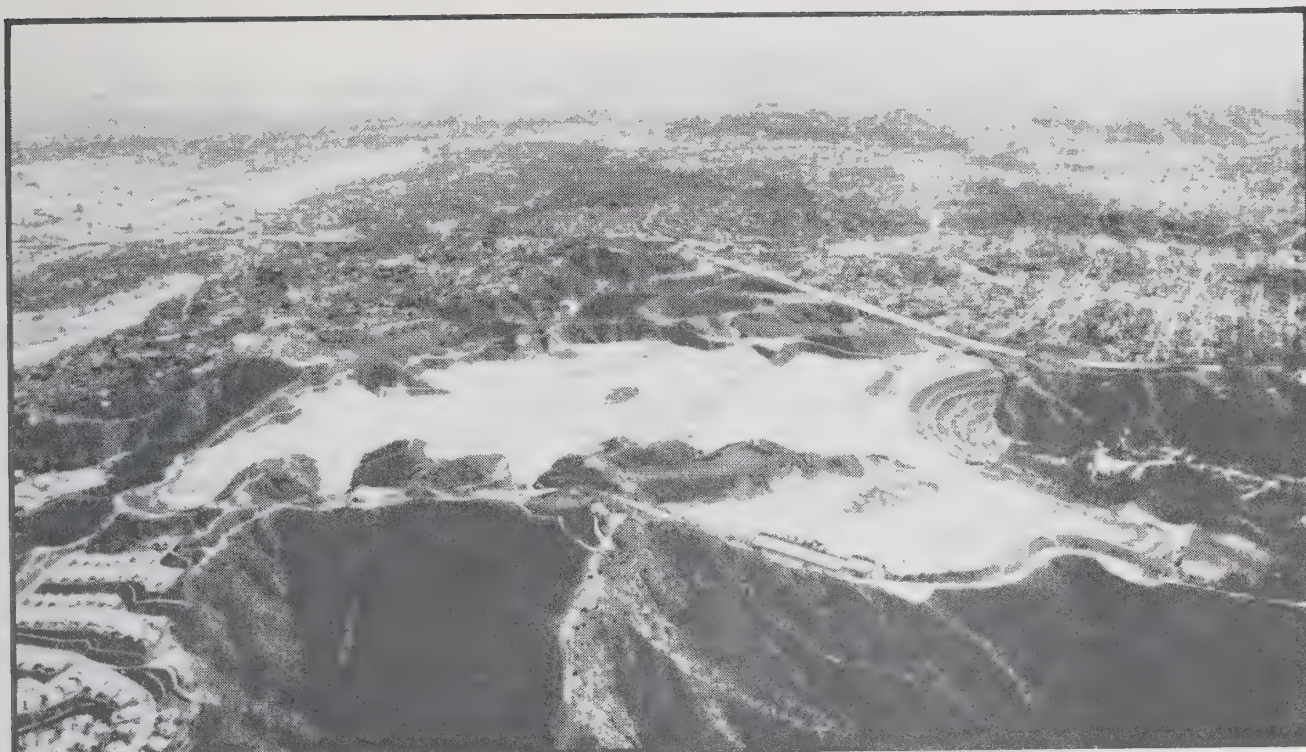
PANORAMIC VIEW
PUENTE HILLS LANDFILL



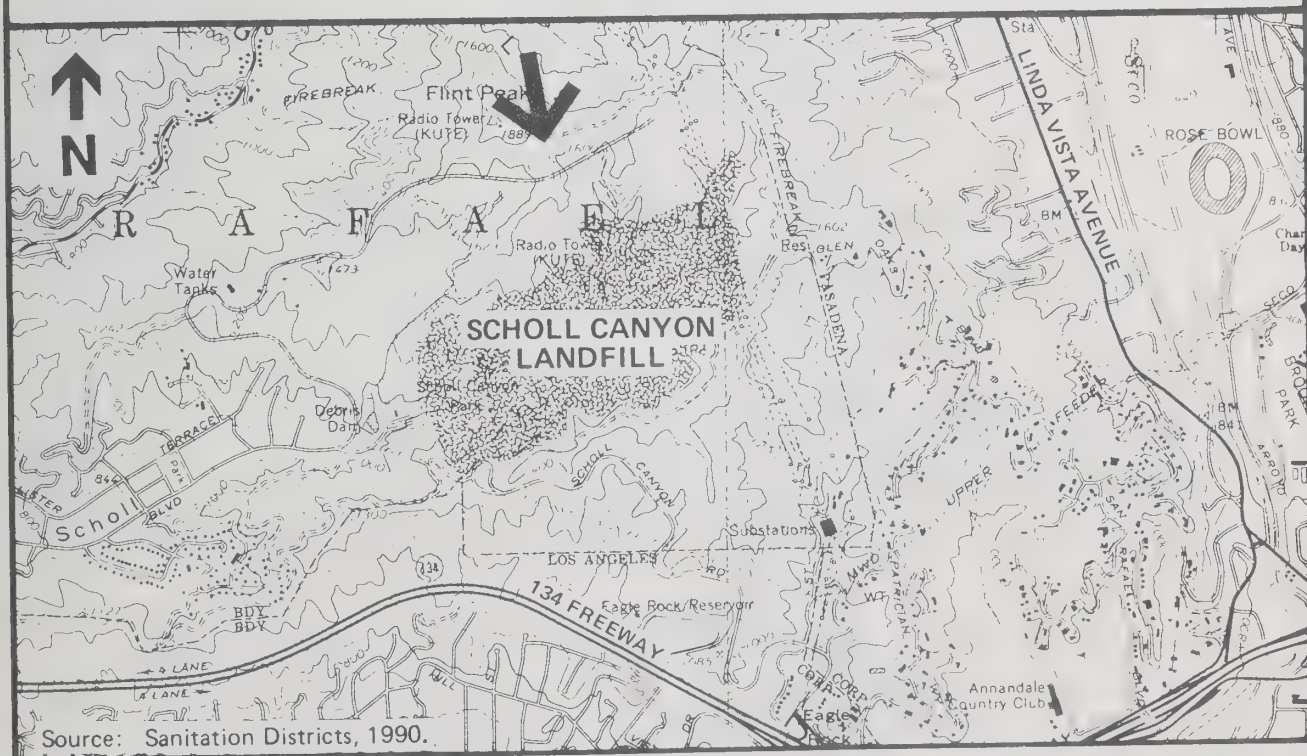
U.S.G.S. MAP,
EL MONTE
QUADRANGLE 1966.
PHOTOREVISED 1981.

Source:
Sanitation Districts, 1990.

Figure 3--7 View of Puente Hills Landfill



PANORAMIC VIEW OF SCHOLL CANYON LANDFILL



U.S.G.S. MAP, PASADENA QUADRANGLE 1966. PHOTOREVISED 1988.

Figure 3-8 View of Scholl Canyon Landfill

site, if additional areas in the City and County were fully permitted, to be 215 million tons. BFI has requested an increase in its operating level to 17,500 TPD. The County Department of Regional Planning is currently reviewing the preliminary Final EIR and has not yet reached a determination on the proposed permit application. Figure 3-9 shows a view of this site looking towards the northwest.

These landfills could undergo expansions of widely different magnitudes, ranging from 6 million tons (Scholl Canyon) to 215 million tons (Sunshine Canyon), as shown in Table 3-1. If all expansions or permit renewals are obtained, approximately 360 million tons of additional capacity will be available. However, while it would appear that if the site expansions and permit renewals are approved, approximately 25 years of disposal capacity would be provided (360 million tons divided by the current annual disposal quantity of 14.5 million tons), this would actually not be the result. As discussed in Chapter 2, the daily disposal capability is the critical factor which must be considered when determining the point at which a daily disposal capacity shortfall could occur. It is very likely that daily disposal limits will be imposed by new permits, thus reducing the ability of the expansions above to provide the needed disposal capacity over the long term. In addition, given the environmental and political factors which affect all landfill permitting, new sites as well as expansions, the actual approved total capacity for the seven projects may be substantially less than 360 million tons.

3.3.3 Impact of Site Expansions on Time-To-Crisis

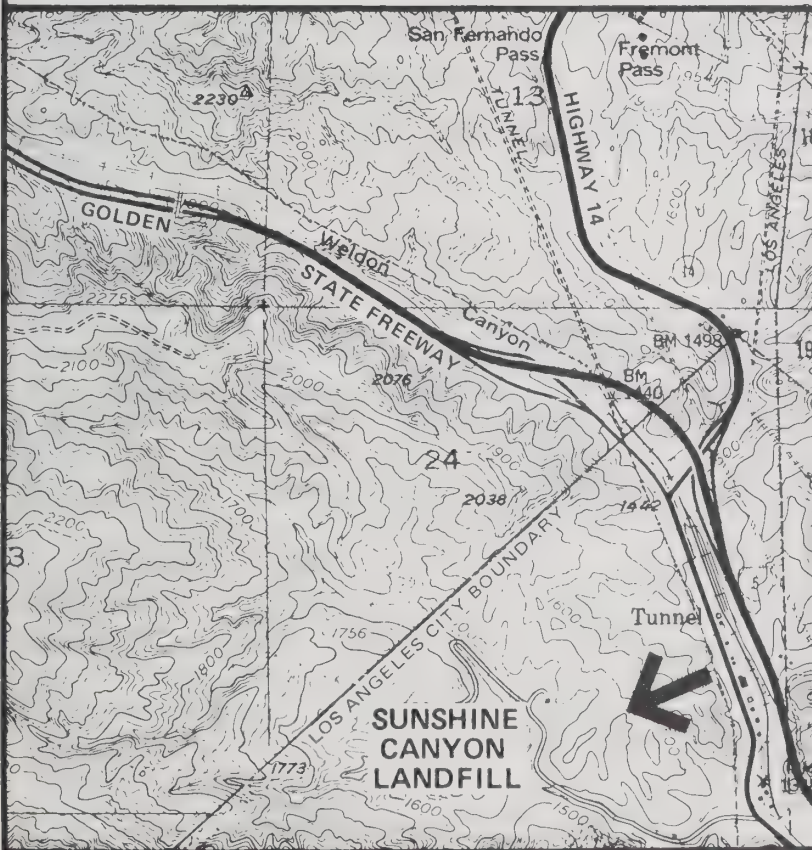
The anticipated ability of all of the expansions to abate the shortfall, taking into account possible permit limitations, ultimate site capacities, and operational constraints, is shown in Figure 3-10. As depicted, even with aggressive waste diversion efforts and all of the site expansions, a shortfall would occur as early as the year 2001. Given the fact that developing a new landfill takes from 5 to 7 years, and that uncertainty exists as to what extent potential expansions will ultimately be approved, new landfill capacity must be pursued now.

3.4 NEW LANDFILL CAPACITY COMPONENT OF THE INTEGRATED SYSTEM

The third component of the Integrated System is new publicly owned landfill capacity within the metropolitan area of the County. The number of new sites and the operating rate (TPD) that will be required of these sites is dependent on a number of factors such as (1) the feasibility of reaching the year 2000 goal of 50 percent diversion specified by AB 939, and



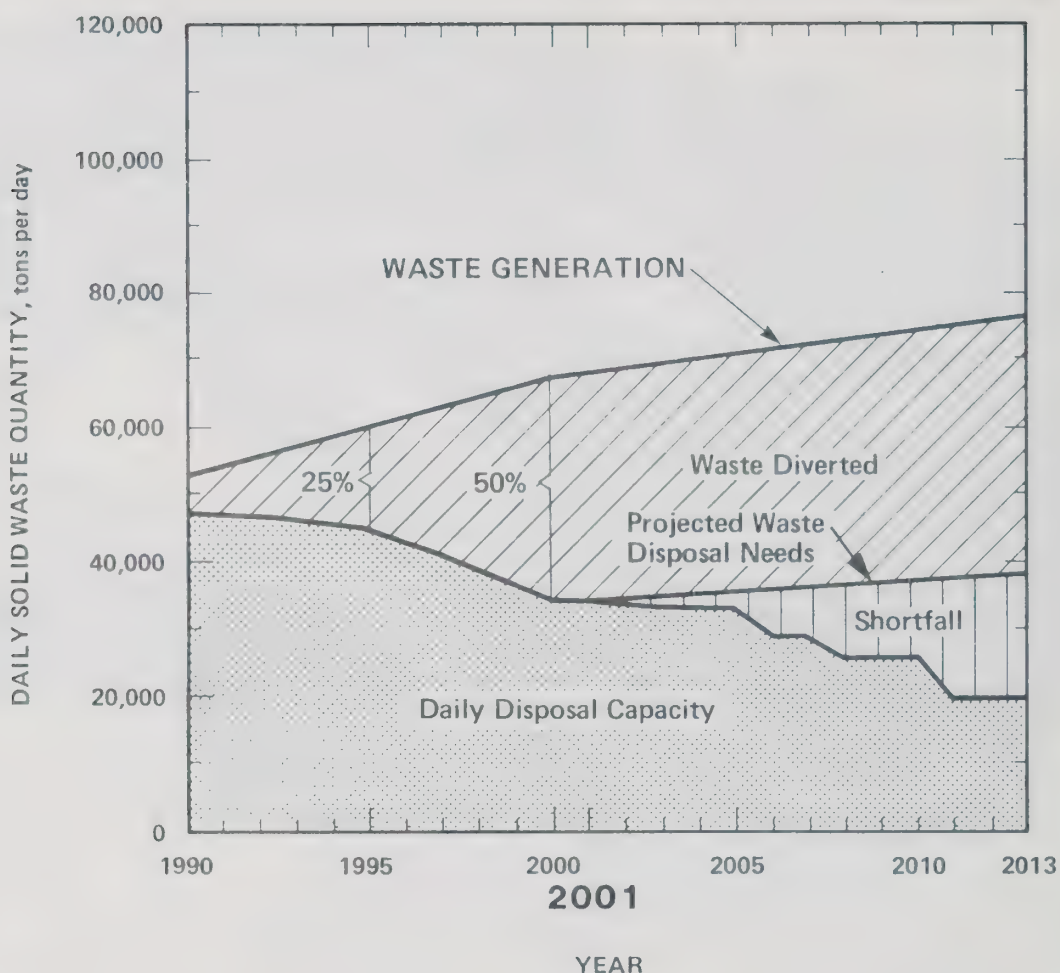
PANORAMIC VIEW
SUNSHINE CANYON LANDFILL



U.S.G.S. MAP,
OAT MOUNTAIN
QUADRANGLE 1952.
PHOTOREVISED 1969.

Source: Sanitation Districts, 1990.

Figure 3-9 View of Sunshine Canyon Landfill



NOTES:

1. **WASTE GENERATION RATE:** THE SUM OF THE AMOUNT OF WASTE DIVERSION AND THE AMOUNT OF WASTE REQUIRING DISPOSAL. WASTE GENERATION IS ASSUMED TO INCREASE AT A RATE OF 1% PER YEAR DUE TO POPULATION GROWTH AND 1.5% PER YEAR DUE TO PER CAPITA INCREASES, TO THE YEAR 2000. AFTER THE YEAR 2000, IT IS ASSUMED THAT NO PER CAPITA INCREASES IN WASTE GENERATION OCCUR DUE TO SOURCE REDUCTION EFFORTS RESULTING FROM AB 939 PROGRAMS.
2. **WASTE DIVERTED:** THE QUANTITY OF WASTE GENERATION WHICH IS PROJECTED TO BE DIVERTED THROUGH RECYCLING AND REUSE EFFORTS. FOR THE PURPOSES OF THIS ANALYSIS THE EXISTING LEVEL OF WASTE DIVERSION IS ESTIMATED TO BE 10 PERCENT.
3. **WASTE MANAGEMENT CAPACITY SHORTFALL:** THE DIFFERENCE BETWEEN THE QUANTITY IN NEED OF DISPOSAL AND THE AMOUNT OF DAILY CAPACITY
4. **DAILY DISPOSAL CAPACITY:** THE AMOUNT OF CAPACITY AVAILABLE AT THE 10 MAJOR CLASS III LANDFILL SITES IN L.A. COUNTY
5. **2001:** THE LAST YEAR THAT THE DAILY DISPOSAL NEEDS OF THE METROPOLITAN AREA CAN BE MET, ASSUMING NO INCREASES IN EXISTING RECYCLING LEVELS, NO EXPANSION OF EXISTING SITES, OR NO NEW SITES.

Source: Sanitation Districts, 1990.

Figure 3-10 Effect of AB 939 Waste Diversion and Site Expansions on Time-to-Crisis Analysis

(2) how many existing sites capable of being expanded will actually be approved for expansion and the level of operation for which these expansions will be approved. For example, Sunshine Canyon has operated at up to 7000 TPD per day but is requesting a new higher operating level of 17,500 TPD in its expansion permit. Due to the long lead time of 5 to 7 years required to implement a modern sanitary landfill from a planning concept to operating site, the County metropolitan area cannot afford to await the outcome of these other components before determining the need for new sites. If a disposal crisis is to be avoided in the long term, the necessary steps to implement new sites must be taken now.

It is possible to develop a very optimistic scenario in which combinations of high levels of waste diversion coupled with assumptions that all existing sites will be fully expanded and at operating levels sufficiently higher than existing levels, that perhaps only one new landfill would be necessary over the next 20 years. However, it is equally possible to construct a very pessimistic disposal capacity scenario that even putting to use Elsmere Canyon, Towsley Canyon, Mission-Rustic-Sullivan Canyons and Blind Canyon as landfills would not provide enough sufficient new disposal capability to prevent a shortfall.

In order to provide a reasonable number of potential new landfill sites upon which detailed technical and environmental studies would be performed, a Preliminary Alternate Site Study was undertaken by the Sanitation Districts and the County of Los Angeles Department of Public Works in 1987 and is discussed in further detail in Chapter 5. The study evaluated the appropriateness of 101 potential landfill sites. Initially, the six highest ranked sites were included in the scope of work for this Program EIR: Blind Canyon, Browns Canyon, Elsmere Canyon, Mission-Rustic-Sullivan Canyons, Towsley Canyon, and Toyon Canyon II. However, subsequent to undertaking this EIR, both the Browns Canyon and Toyon Canyon II sites have been dropped from further evaluation because problematic geologic conditions (see Chapter 5) would make development of a Class III landfill at these sites infeasible. The County of Los Angeles Department of Regional Planning and the U.S. Forest Service are directing the preparation of an independent Environmental Impact Report/Environmental Impact Statement for the project proponent for the proposed Elsmere Canyon site. A discussion of Elsmere Canyon as an alternative site is included in Chapter 5. As a result, this Program EIR considers the three remaining potential landfill sites: Blind Canyon, Mission-Rustic-Sullivan Canyons, and Towsley Canyon. Figure 3-1 shows the location of these sites.

The purpose of this section is to provide a complete project description of each of the potential new landfill sites including the permitting, design, construction, operations, and environmental control features as well as monitoring and mitigation measures. Details of the project that are applicable to all potential sites will be discussed initially. Any specific requirements for a proposed site will be discussed subsequently. Chapter 4 discusses the environmental impacts and mitigation measures related to implementation of the potential landfills.

3.4.1 Locations of Potential New Landfill Sites

The locations of the potential new landfill sites are shown on Figures 3-11 to 3-14. As can be seen from the figures, various boundaries have been drawn on the maps--project boundary and the final fill boundary. The project boundary surrounding the landfill was used to define the study area for site environmental analysis and survey work and will be used in support of appropriate conditional use permits. The final fill boundary defines the maximum area in which filling operations would be conducted. Figures 1-8 to 1-10 show proposed property boundaries for each site. The area within the proposed property boundary is land that the Sanitation Districts would purchase to assure that substantial buffer area would separate landfill activities from sensitive land uses. Brief discussions of each site are given below. A more complete discussion of the surrounding land uses and environmental setting of each of the proposed sites can be found in Chapter 4, Section 4.1.

Blind Canyon

The potential Blind Canyon Landfill is located in the Santa Susana Mountains in the northwest area of the County and partially within the County of Ventura. This potential landfill site is located in unincorporated territories of the two counties, north of the 118 freeway, between Simi Valley and Chatsworth. Access to the proposed landfill site would be from the Simi Valley Freeway (118) at Rocky Peak Road. The proposed landfill area is 2 miles north of the Simi Valley Freeway (118). Blind Canyon encompasses approximately 1010 total acres (ridge to ridge). The access corridor includes approximately 825 acres. The proposed fill plan for Blind Canyon would utilize approximately 530 acres of the canyon for landfilling.

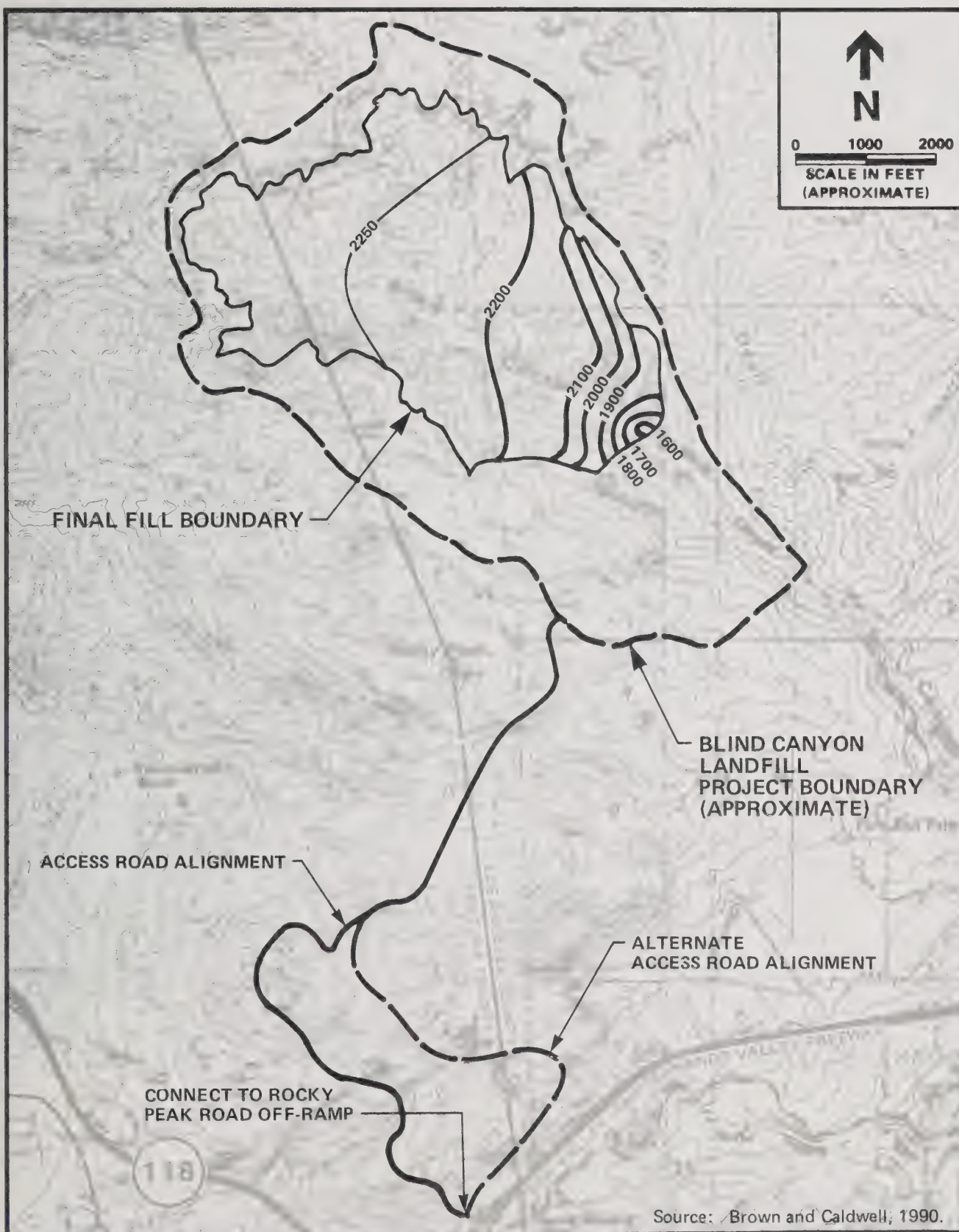


Figure 3-11 Blind Canyon Landfill — Final Fill Boundary

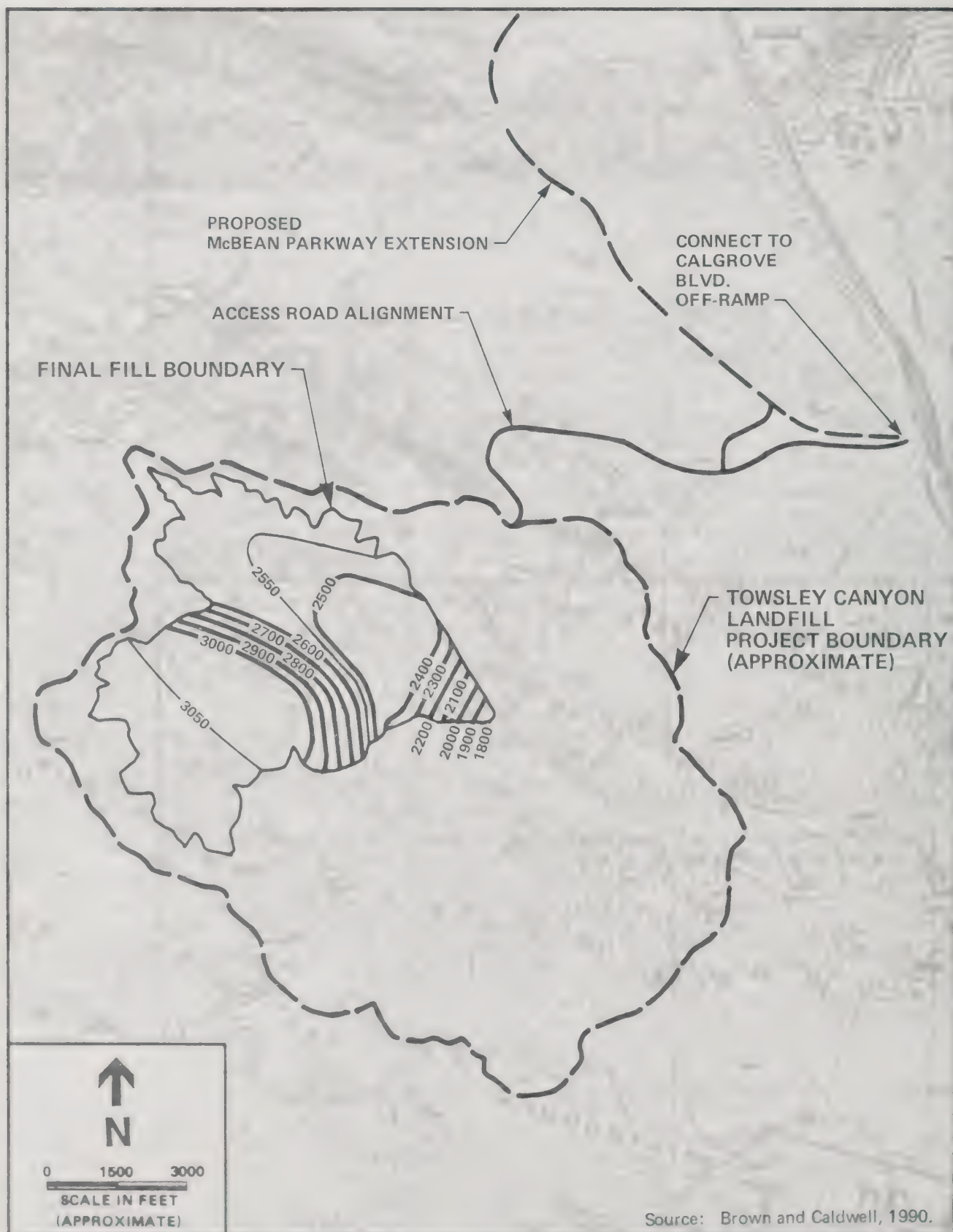


Figure 3-12 Towsley Canyon Landfill — Final Fill Boundary

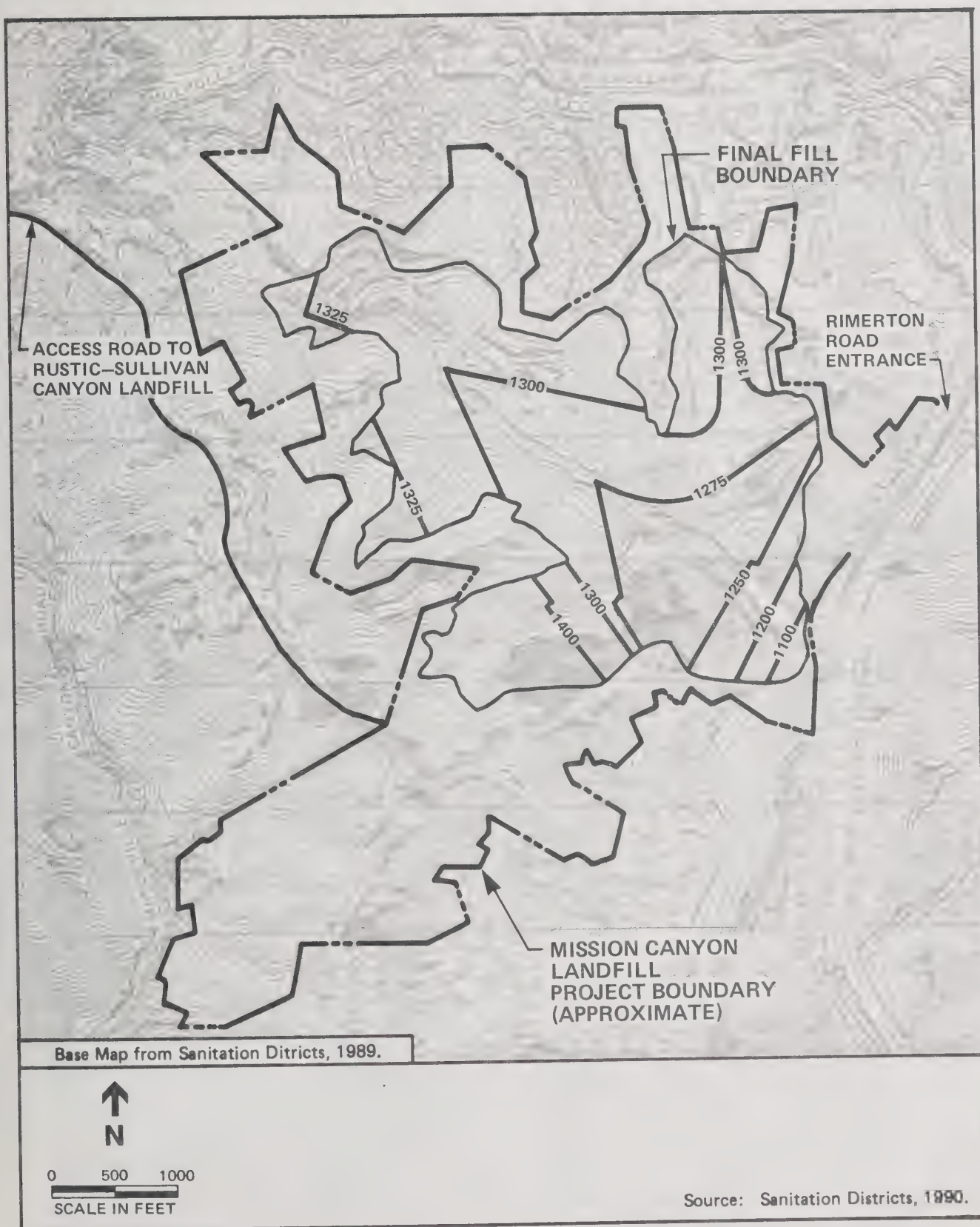


Figure 3-13 Mission Canyon Landfill — Final Fill Boundary

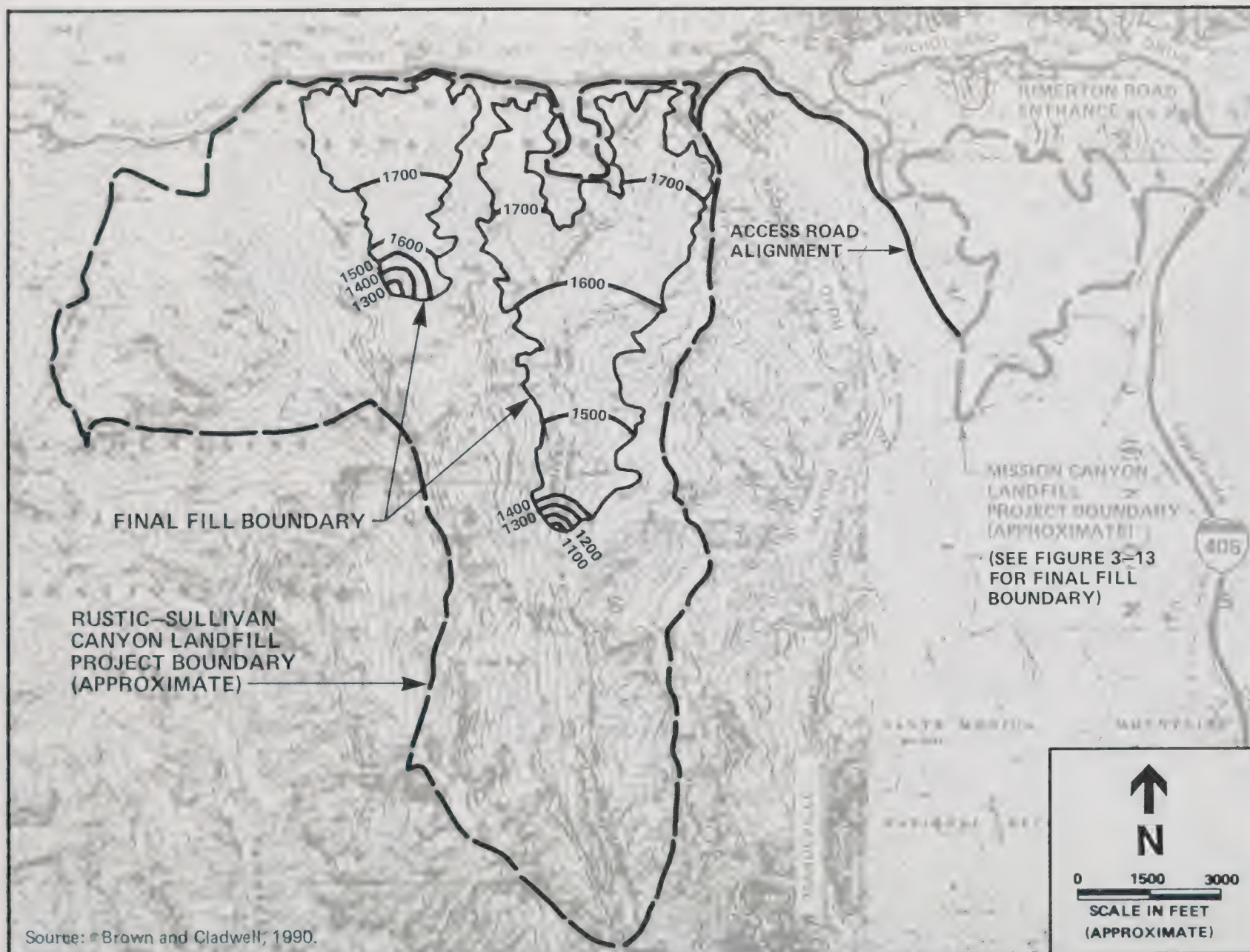


Figure 3-14 Rustic-Sullivan Canyons – Final Fill Boundary

Towsley Canyon

The potential Towsley Canyon Landfill is located in an unincorporated area of the Santa Susana Mountains in the northwest area of the County. Access to the potential landfill site would be from the Golden State Freeway (5) at Calgrove Boulevard. The site encompasses approximately 2,625 acres (ridge to ridge). The access corridor includes approximately 690 acres. The proposed fill plan for Towsley would utilize approximately 760 acres of the site.

Mission-Rustic-Sullivan Canyons

The potential Mission-Rustic-Sullivan Canyons Landfill complex is located in the Sepulveda Pass area of the Santa Monica Mountains. The potential landfill complex is located in the City of Los Angeles, west of the San Diego Freeway (405) and south of Mulholland Drive. Access to the landfill complex would be from the Rimerton Road exit off of the San Diego Freeway. Mission Canyon is approximately 455 acres. Rustic-Sullivan Canyons are approximately 2870 acres. The fill plan for the potential Mission Canyon would utilize approximately 260 acres. Rustic-Sullivan Canyons would utilize approximately 745 acres for fill area.

3.4.2 Estimated Site Capacities

To determine the expected landfill life and the potential environmental effects associated with each landfill site, a daily maximum waste disposal rate was identified for each landfill. For Blind and Towsley Canyons a daily maximum disposal rate of 16,500 tons was used. The Mission-Rustic-Sullivan Canyons Landfill complex is proposed to be operated under a phased system with the Mission Canyon portion not accepting more than 6,000 TPD (as was discussed in the Final EIR (1980)⁴¹, and the Rustic-Sullivan portion accepting up to 16,500 TPD. Mission Canyon would not operate as a landfill simultaneously with the Rustic-Sullivan Canyons portion of the complex.

A summary of physical landfill characteristics including projected site capacities and life expectancies of the three potential landfill sites for the final fill design are presented in Table 3-2. The total fill capacity, as presented in the table, represents the topographic capacity of the landfill. As can be seen from this table, the capacities and site lives of the landfill sites vary substantially, depending on the size of the landfill. Figures 3-11 to 3-14 show the proposed fill designs for each of the potential landfill sites.

Table 3-2 Summary of Landfill Final Fill Characteristics

Landfill site	Acreage		Total fill capacity, (million tons) ^a	Site life, (years) ^a
	Potential ownership area (acres)	Total fill area, (acres)		
Blind Canyon	5,700	530	130	25
Towsley Canyon	5,100	760	225	44
Mission-Rustic-Sullivan Canyon Complex				
Mission Canyon	455	260	24	11
Rustic-Sullivan	2,870	745	101	20

^aTotal fill capacity and site life are based on a landfilling rate of 16,500 tons per day except for Mission Canyon which is based on a rate of 6,000 tons per day.

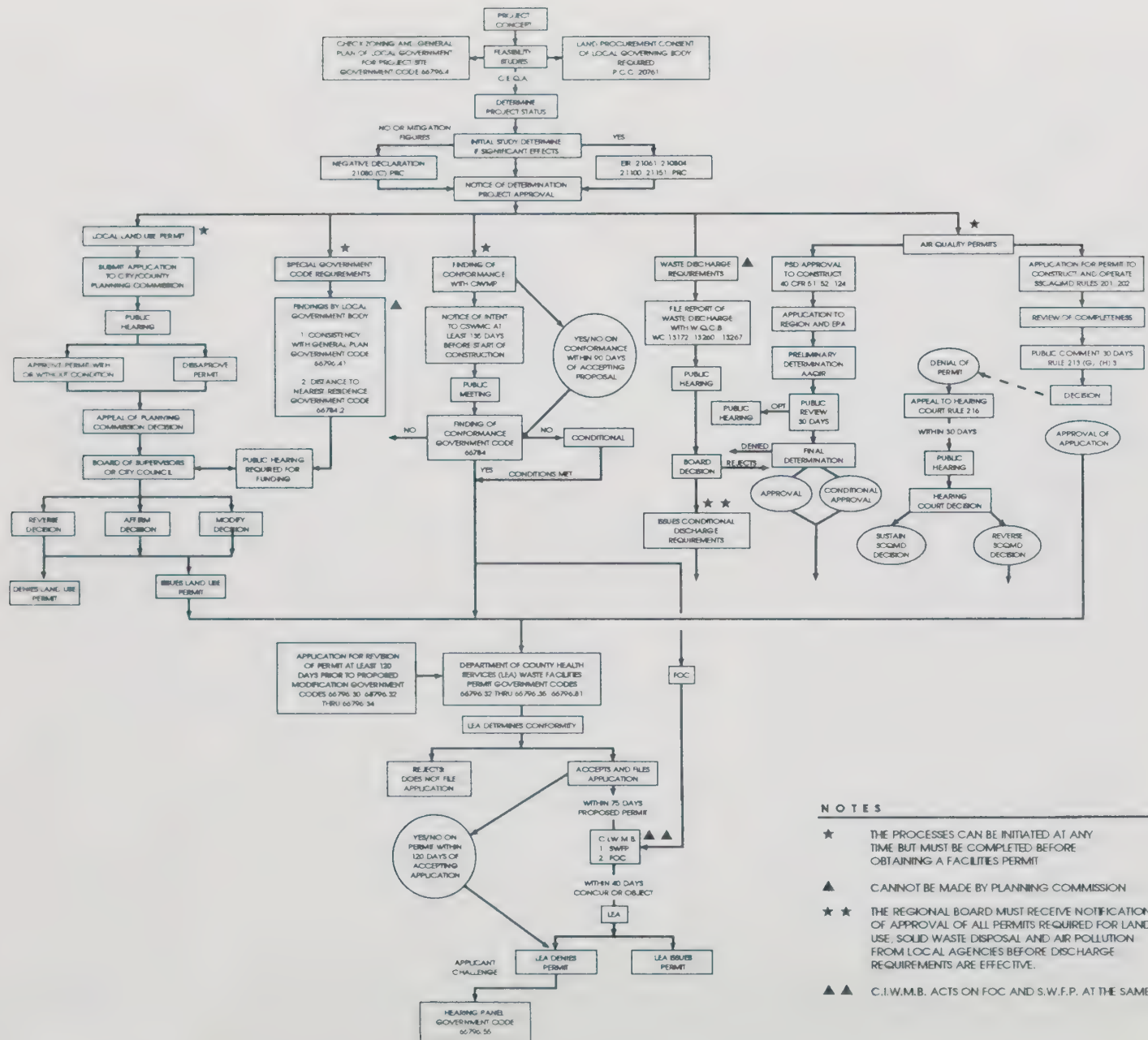
3.4.3 Site Classification

In accordance with Chapter 3, Title 23, Subchapter 15 of the California Code of Regulations, the proposed landfill sites would be classified and operated as Class III waste disposal facilities. Wastes to be received at the potential landfill sites would be limited to nonhazardous wastes which include putrescible and nonputrescible solids; semisolid; and liquid wastes, including wet garbage, trash, refuse, paper, rubbish, inert ashes, dewatered municipal sewage sludge, industrial wastes, construction and demolition wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, manure, vegetable or animal solid and semisolid waste, and other discarded solid or semisolid waste. These wastes must not contain materials which must be managed as hazardous wastes or wastes which contain soluble pollutants in concentrations that exceed applicable water quality objectives or that could cause degradation of waters of the state (i.e., designated waste).

3.4.4 Permitting

A complex set of regulations and standards govern the disposal of solid wastes. These regulations are administered by local, county, state, and Federal agencies. Many of the local and state regulations contain monitoring and reporting requirements for the purpose of assuring compliance with standards. Appendix E indicates regulatory requirements for Class III landfills with Sanitation Districts design criteria to meet these requirements. Prior to implementation of any of the potential landfill sites, the appropriate permits must be obtained by the owner/operator of the facility. The purpose of this section is to describe the major permits and associated standards which would be applicable to the potential landfill projects and to describe some of the anticipated monitoring requirements. Figure 3-15 indicates the necessary permitting process. Each of the permitting agencies would specify requirements as conditions of granting permits.

Various other permits would also be required including grading permits (City/County Public Works Departments), building permits (City/County Departments of Building and Safety), and the Uniform Fire Code Permit (City/County Fire Departments). It is intended that this Program EIR will address the California Environmental Quality Act (CEQA) requirements for all required approvals.



NOTES

- ★ THE PROCESSES CAN BE INITIATED AT ANY TIME BUT MUST BE COMPLETED BEFORE OBTAINING A FACILITIES PERMIT
- ▲ CANNOT BE MADE BY PLANNING COMMISSION
- ★★ THE REGIONAL BOARD MUST RECEIVE NOTIFICATION OF APPROVAL OF ALL PERMITS REQUIRED FOR LAND USE, SOLID WASTE DISPOSAL AND AIR POLLUTION FROM LOCAL AGENCIES BEFORE DISCHARGE REQUIREMENTS ARE EFFECTIVE.
- ▲▲ C.I.W.M.B. ACTS ON FOC AND S.W.F.P. AT THE SAME TIME.

Figure 3-15 Solid Waste Facility Permitting Process

Land Use Permits

Local land use permits must be obtained from the local governing bodies for the potential landfill projects. For a public agency carrying out a project, such as the Sanitation Districts, the process by which a Conditional Use Permit (CUP) is obtained commences with the submission of a CUP application which would include the Final EIR as certified by the Sanitation Districts Board of Directors and detailed maps showing the location and design of the proposed project.

For the potential landfill projects located in unincorporated County areas, Blind and Towsley Canyons, the CUP application would be reviewed by the County of Los Angeles Regional Planning Staff and Regional Planning Commission for consistency with the County General Plan. Portions of the potential sites are also located within the County General Plan's Significant Ecological Areas and must also be reviewed by the County's Significant Ecological Area Technical Advisory Committee (SEATAC). A general plan amendment to the Conservation Element would be required to relocate the boundary of the SEA to exclude those portions proposed to be utilized for landfill operations. The general plan amendment would require revisions to General Plan Policy Maps. The revisions would include changes from SEA to Nonurban (R) for the Land Use Policy Map; SEA to Hillside Management (HM) for the Special Management Areas Map; SEA to Nonurban Hillside for the General Development Policy Map; and Hillside Management/Significant Ecological Area (HM/S) to Hillside Management (HM) for the Santa Clarita Valley Area Wide General Plan. These amendments are required unless a waiver is granted according to Government Code Section 66796.42. Chapter 4, Section 4.1 provides a more complete discussion of the land use settings and zoning requirements.

The potential Mission-Rustic-Sullivan Canyons Landfill Complex is located within the City of Los Angeles boundaries and would, therefore, require a land use permit from the City Planning Commission.

Technical Operating Permits

The regulations governing sanitary landfill activity are interrelated and, in some cases, overlapping. Several agencies have permit and enforcement authority over the operation and ultimate closure of a landfill project.

Technical operating permits would include Waste Discharge Requirements, Solid Waste Facilities Permit, Permits to Construct and Operate, and the Stream Alteration Agreement. These permits are discussed below.

Waste Discharge Requirements. The California Regional Water Quality Control Board (RWQCB), Los Angeles Region, would issue waste discharge requirements for each potential landfill, based on the requirements for operating a Class III landfill set forth in Title 26, Chapter 3, Subchapter 15 of the California Code of Regulations. The waste discharge requirements establish conditions related to water quality control that must be adhered to and require a comprehensive monitoring and reporting procedure. The waste discharge requirements also specify the types of wastes that may be accepted at the site.

Solid Waste Facilities Permit. A Solid Waste Facility Permit (SWFP) is required by state law for all new landfills. After issuances of local land use permits, SWFPs would be required to be obtained prior to the commencement of refuse disposal activity. The SWFP is issued by the appropriate Local Enforcement Agency (the County Department of Health Services or the City of Los Angeles) with the approval of the California Integrated Waste Management Board. The SWFP would impose the State Minimum Standards for the operation of the landfill and would also incorporate site specific conditions and requirements for monitoring and reporting. The monitoring and reporting activities as well as enforcement of permit conditions would be supervised by the County Department of Health Services in the case of Blind and Towsley Canyons or the City of Los Angeles for Mission-Rustic-Sullivan Canyons. The SWFP normally specifies the types and quantities of waste that may be accepted at the site and is generally consistent with the waste discharge requirements issued by the RWQCB. The State Minimum Standards, which the SWFP implements, contain provisions for daily cover of the landfilled waste, control of vectors, control of nuisances, protection of water quality, control of landfill gas, and closure and postclosure maintenance activities.

Permits To Construct and Operate. Permits would also be required from the South Coast Air Quality Management District (SCAQMD) for the landfill gas collection and disposal system. The permits to construct and operate from the SCAQMD would be required for any landfill gas flaring facilities and other types of stationary facilities with potential emissions and would include monitoring and performance conditions.

Stream Alteration Agreement. The California Department of Fish and Game permit would specify measures for the protection and/or restoration of any wetland habitat on the site. A Stream Alteration Agreement would be required for those areas where designated drainage areas (USGS blue line water courses) are altered.

Controls exist within each regulatory agency that ensure the landfill operation complies with the land use, environmental, and solid waste management regulations imposed on the project.

3.4.5 Disposal Operations

The potential landfills would be operated as modified "cut and cover" sites. Excavation of soils for cover material would be from within the final landfill boundaries identified for each site (Figures 3-11 to 3-14). Refuse would be spread and compacted in cells approximately 18 to 20 feet in height. By the end of each working day, all compacted refuse would be covered with approximately 9 to 12 inches of cover material (soil, shredded green waste, or other approved cover material). This process creates a refuse cell configuration as illustrated on Figure 3-16. Approximately every 40 feet vertically (two cells), a bench approximately 15 feet wide would be constructed on the slope face to provide for improved slope stability, drainage, and access for maintenance.

The finished front face of the landfill would typically have an overall slope of approximately 2:1 (horizontal:vertical). Soil would be placed at a minimum thickness of 7 feet normal to the front face (15 feet on the horizontal). Final cover on the top surface would be a minimum of 5 feet thick and would meet Subchapter 15 requirements.

The following sections provide greater detail on the development, access, daily operations, monitoring, and closure of the proposed landfill sites.

Site Development

Prior to landfiling at any of the potential sites, support facilities and certain environmental control features must be constructed. Support facilities include scale houses, equipment yards, administrative offices, and utility connections. The scale houses for the potential sites would be constructed along the access road to the landfill area and would be equipped with up to eight scales to weigh incoming loads. Tipping fee rates at the potential sites would be set on a weight basis for all loads entering the facility. Additionally, each scale house would feature incoming hazardous waste screening equipment including a gamma scintillometer and mirrors to observe incoming loads where appropriate. Site administration offices would be constructed adjacent to the scale house area and would be designed to provide for on-site supervising, engineering, and monitoring personnel. The equipment maintenance yards would be temporary facilities that could be relocated as the topography of the site changed. The equipment yards would be used as service and storage areas

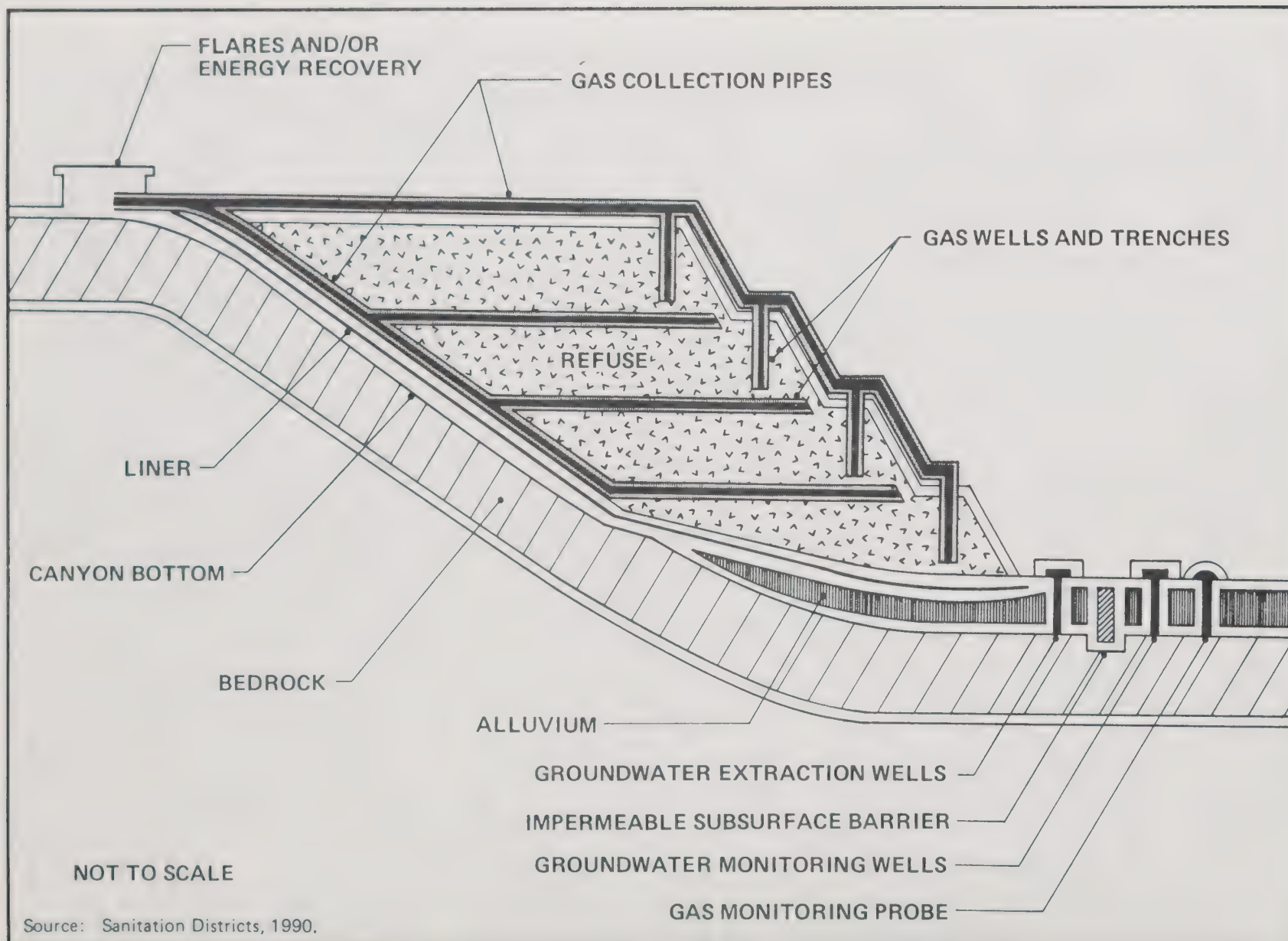


Figure 3-16 Landfill Environmental Control Systems

for on-site landfill operating equipment. Temporary lighting systems would be employed in the equipment maintenance yards to provide lighting in the early morning and early evening hours.

Before an area of a site could accept refuse, a RWQCB approved liner system would be installed. Currently, the Sanitation Districts are installing composite liner systems in new operating areas of existing sites to serve as an environmental control feature to impede the migration of both potential leachate and landfill gas. A complete description of the composite liner system is given later in this chapter.

Excavation and Fill Sequence

The proposed fill boundary for each of the proposed landfill sites is shown on Figures 3-11 to 3-14. These fill boundaries are based on site conditions and development at each site. Following excavation and proper preparation, the liners and drainage facilities for the first phase at each site would be constructed at the lower elevation of the canyon and proceed upward. Construction would proceed toward the higher elevations of the canyon as additional space is required.

In general, excavation would proceed such that soil quantities are generated as they are needed for landfill operations. For several cells, excavations must be made and the soils generated placed in stockpiles to enable construction activities to prepare areas for waste disposal. Final excavation contours and excavation bench locations would be based on detailed geotechnical investigations of actual field conditions. Typical excavation slopes for eventual liner construction would be cut at 2:1 or less, with 20-foot-wide-benches at 40-foot vertical intervals. Temporary ditches to control stormwater runoff would be provided on the excavation benches.

The potential landfill sites include tributary canyons as part of the overall landfill boundary. Portions of ridges lying within the fill areas of each of the proposed landfills may be removed and used as cover soil or other appropriate use as the fill areas are developed. The potential landfills would be excavated within the boundaries as depicted on Figures 3-11 to 3-14, which are a minimum of approximately 100 feet below the ridge lines. All on-site cover material needs can be met by excavation within these boundaries. In addition, the Sanitation Districts may accept free dirt as well as use green waste for cover, offsetting the need for excavated soils.

The canyons would be filled in various phases over the projected life of the respective potential landfills. Beginning with the first year of operation and ending with closure, fill would be placed in lifts constructed by

proceeding sequentially from the bottom portions to the upper portions of each canyon while at all times maintaining appropriate grades for drainage and access.

Hours of Operation

The potential landfill sites would be open to public access for disposal of refuse from 6 a.m. to 5 p.m., 6 days each week (Monday through Saturday), with the exception of certain holidays.

Personnel and Equipment

Personnel needs of the landfill sites based on an operating rate of 16,500 TPD are as follows:

	<u>Number of employees needed (16,500 TPD)</u>
Environmental engineers	3
Operators	45
Site attendants	58
Weighmasters	7
Grounds maintenance	10
Site supervision	4
Technicians	12
Water truck drivers	3
Mechanics (service crew)	<u>8</u>
Total	150

Table 3-3 identifies the numbers and types of equipment that would be available at each of the potential landfill sites. In the event that any heavy equipment becomes inoperable for an extended period of time, replacement equipment would be transferred from other Sanitation Districts landfills or rented from nearby vendors until repair or permanent replacement occurs.

Security

Security at the potential landfills would be provided by chain link fencing at accessible portions of the landfill perimeter and a locking gate at the entrance near the scale area. During nonoperating hours, the landfill site would be patrolled by a private guard service. In addition, the scale house would be equipped with an alarm system. Unauthorized access would not be permitted at any time, and violators of these regulations would face suspension of disposal privileges as well as other legal actions.

Table 3-3 Landfill Equipment Needs

Equipment ^a	Number on site	Number in use daily
Crawler tractors (140 HP-460 HP)	24	18-23
Scrapers (31-44 cubic yards)	18	9-18
Motor graders (275 HP)	2	2
Water trucks (2,500 gallons)	15	8-15
Wheeled tractor with 18 foot drag scraper (310 HP)	2	2
Shredders (10-50 tons/hr)	2	1-2

^aDescriptive information on the various equipment is as follows:

- Crawler tractor (140 HP) used to work slope area (small size unit).
- Crawler tractor (335 HP) are the size commonly used to place and compact trash.
- Crawler tractor (460 HP) are usually used to rip the borrow pit, push scrapers, and slope the cut banks. Attachments include extended slope boards and rippers with one or more shanks.
- Scrapers used for transporting and applying cover material.
- Wheeled tractor with 18 foot drag scraper used for site cleanup and finishing grades.
- Shredders, will include grinders required to shred green waste, tires, and/or wood waste.

Note: Needs are based on a waste stream of 16,500 TPD.

Source: Sanitation Districts, 1989.

Site Access

Access to each of the proposed landfills would be by paved surface roads connecting to an adjacent freeway. The roads would be designed and constructed to handle the anticipated traffic loads and would be dedicated for use only by landfill related traffic. The roads would typically be improved to a three lane roadway (two entering lanes and one exiting lane), 45 feet in width, with 10-foot shoulders on each side. Roadway grades would typically not exceed 7 percent. The minimum radius for curves would be approximately 200 feet. Speed limits would be posted at 15 mph. Section 4.4 presents a more detailed discussion of associated traffic impacts and mitigations for each of the proposed sites.

Blind Canyon Access. The potential Blind Canyon Landfill site would be accessed via the Rocky Peak Road exit north from the Simi Valley Freeway (118). Figure 3-11 indicates two proposed alternate alignments for the access road from the freeway to the operating boundary of the site. The proposed access is approximately 2 miles in length from the freeway to the operating boundary.

Towsley Canyon Access. The potential Towsley Canyon Landfill site would be accessed via the Calgrove Boulevard exit from the Golden State Freeway (I-5). Figure 3-12 indicates the proposed access road alignment from the Calgrove Boulevard exit to the operating boundary of the site. As part of this project, the proposed McBean Parkway Extension west of I-5 would be constructed up to the point of the access road intersection. The proposed access is approximately 2 miles long (including the McBean Parkway Extension to be constructed).

Mission-Rustic-Sullivan Canyons Access. The potential Mission-Rustic-Sullivan Canyons Landfill site would be accessed via the Rimerton Road exit from the San Diego Freeway (405). Figure 3-13 indicates the proposed alignment from the freeway exit to the Mission-Rustic-Sullivan sites. The proposed access to the Mission Canyon area is approximately 1000 feet in length. The proposed access road connecting main Mission to the Rustic-Sullivan Canyons is approximately 2.5 miles in length.

Utilities

On-site utility needs include water and electricity. More detailed discussion is included in Chapter 4, Section 4.11.

Water. On-site water needs include dust control, fire control, sanitation facilities, potable water, and landscape irrigation. Section 4.11 provides information on the volume of water required for each of the several use categories for up to

a 16,500-TPD scenario. As indicated, sites of this size would require up to approximately 2,037 acre-feet per year. To the extent feasible, the nonpotable water needs would be supplied by utilizing reclaimed municipal waste water from nearby wastewater treatment facilities with only the small potable water needs provided by the local water purveyor. Chapter 4, Sections 4.11.3 through 4.11.5, provides a complete description of the water demands and availability for each of the potential sites.

Electricity. Each of the potential landfills would require electricity for daily operation. Electrical power would be used for office buildings, truck scales, radio communication system, and other miscellaneous items. If a gas-to-energy station is used in the future to convert landfill gas to electrical energy, then landfill needs would be met and excess electricity would need to be sold to the Los Angeles Department of Water and Power or Southern California Edison (depending on landfill site).

Environmental Control Features

Prior to and during the solid waste disposal operations at the potential landfills, various measures designed to control potential environmental impacts would be implemented. These features are intended to allow for safe operating procedures at the potential landfills for the protection of public health. Environmental control features include:

- Groundwater Protection System
- Surface water Drainage System
- Landfill Gas Recovery System and Odor Control Measures
- Incoming Waste Checking
- Visual Access Control Measures
- Dust Control Measures
- Litter Control Measures
- Noise Control Measures
- Vector Control Measures
- Fire Control Measures

This following discussion present details of these individual components of the environmental control programs that would be implemented at the potential landfills. Additional discussions of these features as mitigation measures is presented in Chapter 4.

Groundwater Protection System. A groundwater protection system consisting of a composite liner system, subsurface barrier system, including extraction and monitoring wells and unsaturated zone monitoring wells would be installed at each potential site prior to commencement of landfill operations. The liner system would serve to prevent the migration of both

potential leachate and landfill gas into the alluvial of bedrock material beneath the fill. The Sanitation Districts are currently employing a composite liner design at several existing landfills to contain both landfill gas and potential leachates. A composite liner system would consist of (from bottom to top), an underdrain, a clay liner, a synthetic liner, a leachate collection and removal system, a geotextile filter, and a protective soil layer. If necessary, a landfill gas header would also be installed to enable the leachate collection system to also be used as a landfill gas extraction system. A cross section of the composite liner system is shown on Figure 3-17. Chapter 4, Section 4.2 provides a detailed description of how the proposed composite liner system serves to mitigate potential migration of landfill gas and potential leachate. The actual design of the liner system for each potential landfill would be performed on the site specific requirements of each site and would have to be approved by the RWQCB prior to installation.

A subsurface barrier system would be constructed consisting of both passive and active components. The "passive" component consists of cement/bentonite subsurface barriers which impede the flow of canyon water. The subsurface barriers would be constructed by the slurry trench method. A depiction of this method is shown on Figure 3-18. In this method, a liquid slurry composed of a mixture of water, bentonite clay, fly ash, and cement is continually piped into a trench creating an extremely low permeability barrier. The formed barrier would be less permeable than the required permeability of 10^{-6} cm/sec specified in "Construction Standards for Waste Management Units", of the California Administrative Code, Title 23, Chapter 3, Subchapter 15, Article 4. Generally, the trench would be keyed a minimum of five feet into the bedrock. The actual depth of key will be determined by a California-certified engineering geologist or registered geologist as the excavation proceeds based upon site specific features.

In addition to the cement/bentonite slurry trench subsurface barriers, the system would also include an "active" component consisting of extraction wells and piezometers immediately upgradient of the barriers and monitoring wells and piezometers immediately downgradient of the barriers.

Extraction wells would be installed upgradient of the barriers to automatically remove canyon waters which accumulate behind the barriers. This water would then be treated if necessary and used on site for dust control or disposed of. Monitoring wells would be installed downstream from the barrier to ensure the integrity and effectiveness of the subsurface barrier system. The design of the extraction and monitoring wells would be based on site-specific conditions and would

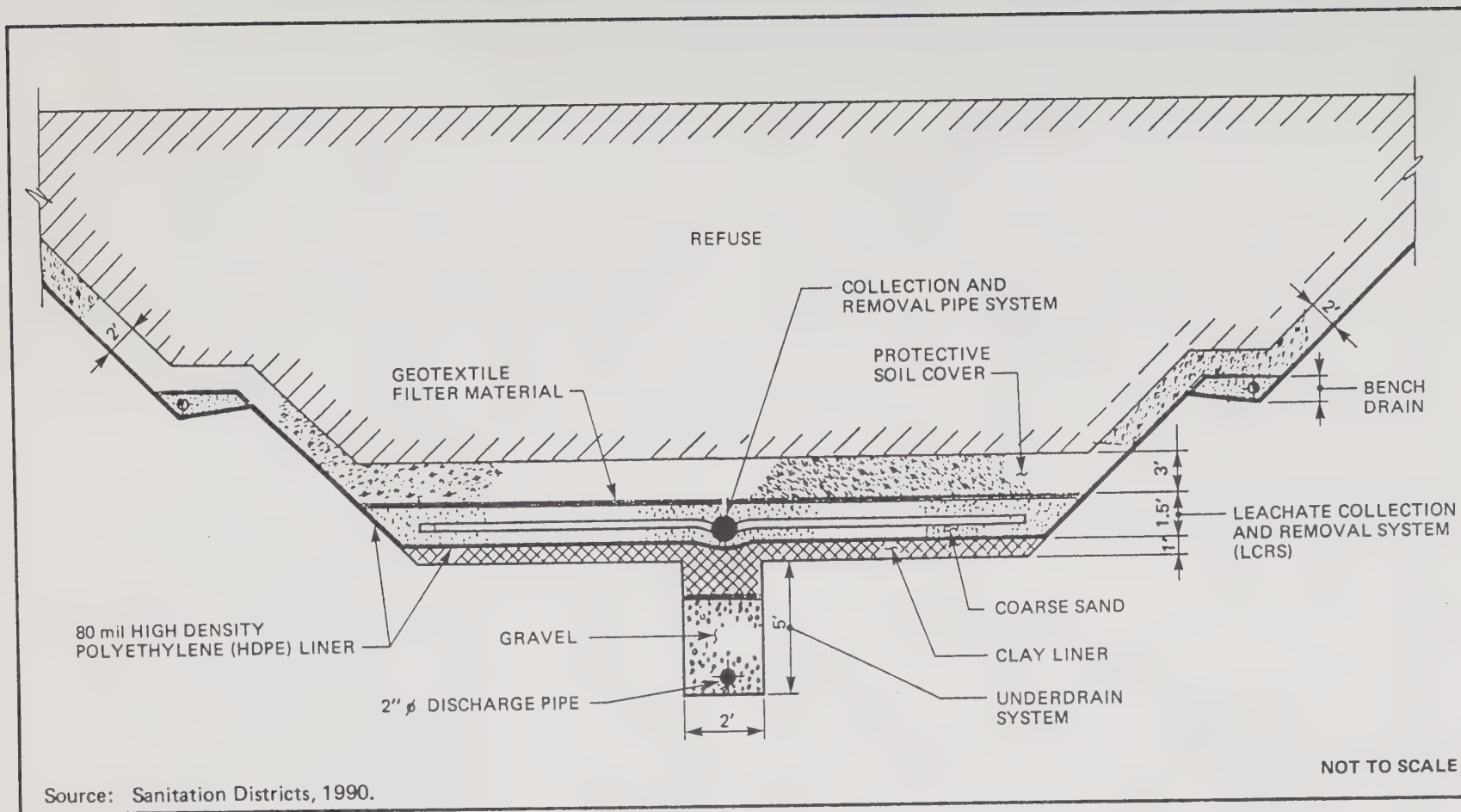


Figure 3-17 Cross-Section of Composite Liner System

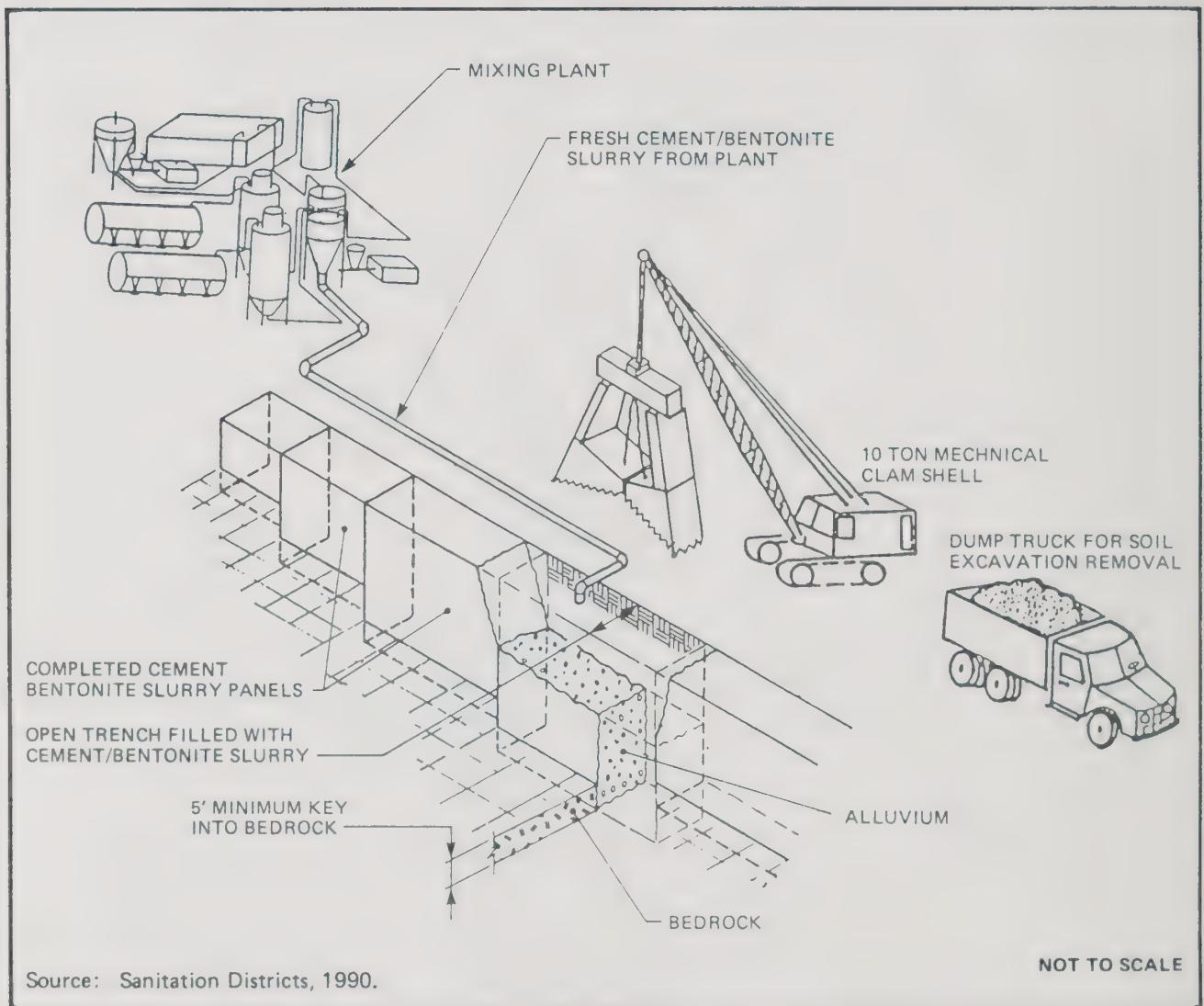


Figure 3-18 Cement/Bentonite Subsurface Barrier

follow the applicable design methods outlined in the California Department of Health Services' Decision Tree Manual (DOHS, 1985).

In addition to the monitoring wells associated with the subsurface barrier systems, a series of upgradient and downgradient monitoring wells would be installed at each potential landfill site prior to placement of refuse. These monitoring wells would be located in both saturated alluvial materials and saturated bedrock materials. The purpose of these wells would be to characterize the quality of the existing groundwater at the site so that the RWQCB can set water quality protection standards for each potential landfill. After refuse placement operations begin, the downgradient bedrock and alluvial wells will be used as detection monitoring points which will identify any potential problem associated with landfilling operations.

The unsaturated zone monitoring system will be used to characterize the unsaturated zone (the zone between the ground surface and the top of the water table) in the same fashion as the groundwater monitoring system. The RWQCB will use the data collected prior to refuse placement to set protection standards for the unsaturated zone and then downgradient locations will be used as detection monitoring points after landfilling begins.

Surface Water Drainage System. Primary surface water drainage at the proposed new landfills would be controlled by channeled ditches, pipelines, drainage benches, and interim drainage structures. As indicated in Chapter 4, Section 4.2, Subchapter 15, regulations specify that permanent precipitation and drainage control facilities at Class III Waste Management units be designed to handle a 100-year, 24-hour storm. The facilities at the potential new landfills would be designed using a modified rational formula according to the Methodology contained in the Hydrology Manual, prepared by the Hydraulic Division, Los Angeles County Flood Control District, December 1971 (LACFCD, 1971), as amended in 1989. An isohyetal map would be used to determine the maximum 24-hour period precipitation from a 50-year frequency storm. This would be multiplied by an adjustment factor to approximate the maximum 24-hour precipitation from a 100-year frequency design intensity storm flow. This formula considers, in addition to rainfall intensity, the soil characteristics, land use patterns, acreage, and hydraulic characteristics of the drainage area.

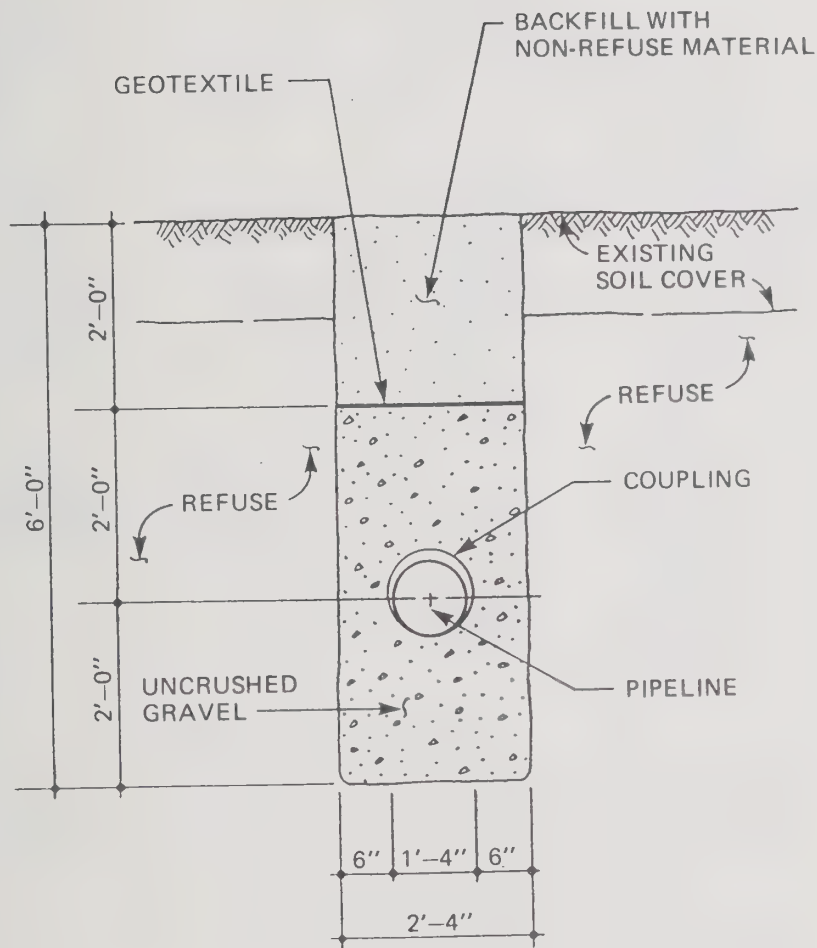
Permanent drainage ditches constructed over fill areas would be underlain by a minimum 5-foot thickness of earthfill and lined with asphalt or concrete or they may be seeded for a dense grass cover to minimize erosion. Runoff would be controlled in the permanent site stormwater/sedimentation basins located at the base of the landfill. As filling advances up the canyon, temporary drainage controls would be constructed at various locations on the landfill perimeter to carry run-on from unfilled areas around the active area of the landfill.

The upper plateau surface of the final landfill would be sloped appropriately. After this surface has been vegetated, stormwater runoff should not cause significant erosion. To minimize the potential for erosion on the steeper fill faces, drainage benches would be constructed at 40-foot vertical intervals to intercept runoff. These drainage ditches would convey the surface runoff through permanent drains to sediment control basins before release to the natural water course.

Before each rainy season, all drainage facilities would be inspected and any required maintenance performed to ensure that the drainage ditches function properly. As part of a regular maintenance program, the landfill surface would be inspected routinely and repaired.

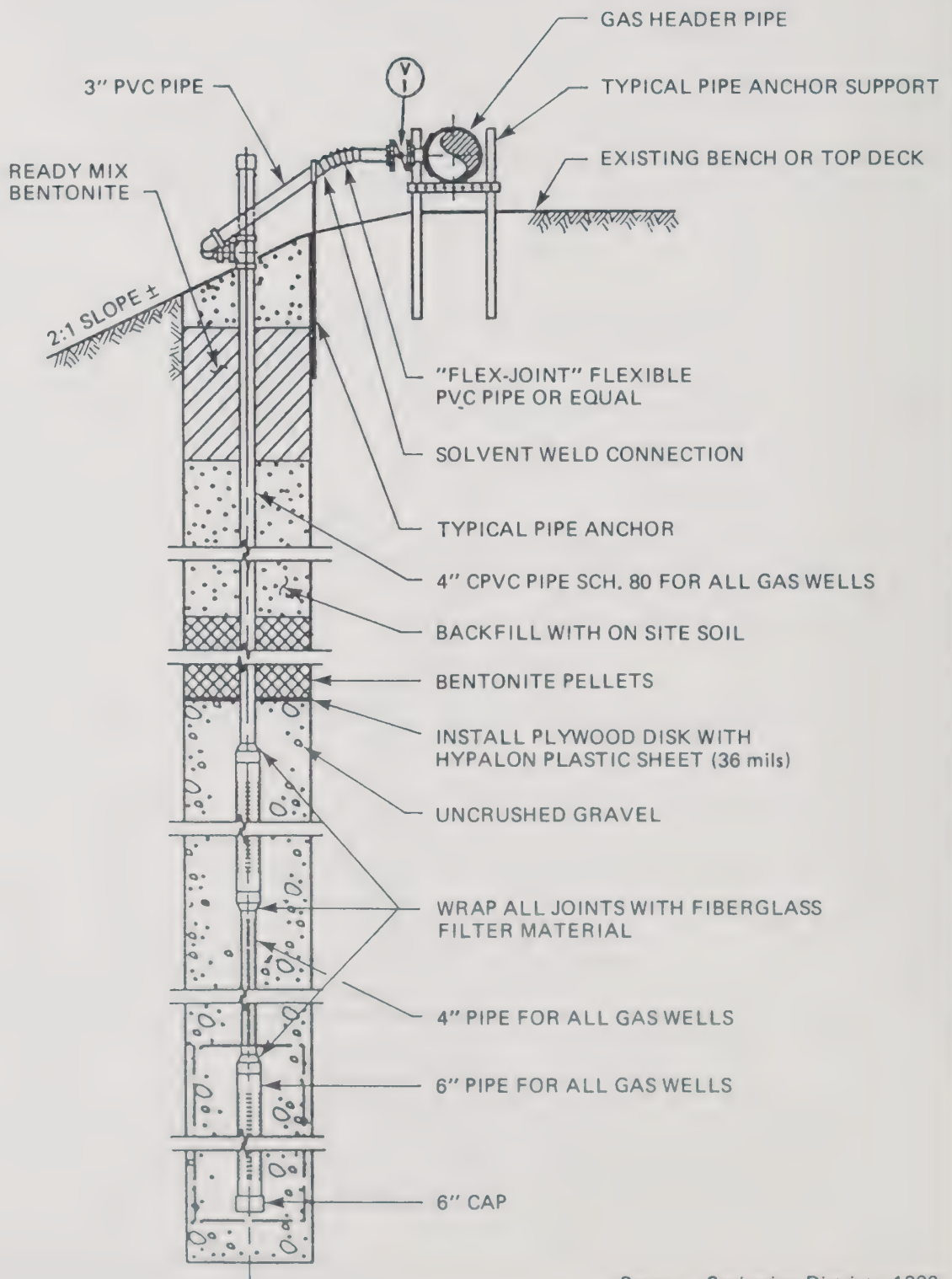
Landfill Gas Recovery System and Odor Control Measures.
The landfill gas recovery system for odor control and prevention of landfill gas migration consists of gas recovery wells, trenches, pipelines, gas flares, and peripheral monitoring probes. Figures 3-16 and 3-19 to 3-21 illustrate various components for the landfill gas recovery system. Landfill gas is the product of the natural microbiological decomposition of buried organic material and typically contains nearly equal amounts of carbon dioxide and methane with traces of other decomposition by-products. The maximum rate of gas generation in a sanitary landfill occurs soon after solid waste is buried and then decreases with time. The level of gas production depends primarily on the organic content and moisture content of the buried solid waste.

If not controlled, landfill gas is capable of subsurface migration which may take place both vertically and laterally. Because methane is explosive when present in concentrations ranging from 5 to 15 percent, potential safety problems could arise if the landfill gas were to accumulate and ignite in a confined, air-filled space. Other potential problems include degradation of air quality and water quality and adverse effects on surface vegetation.



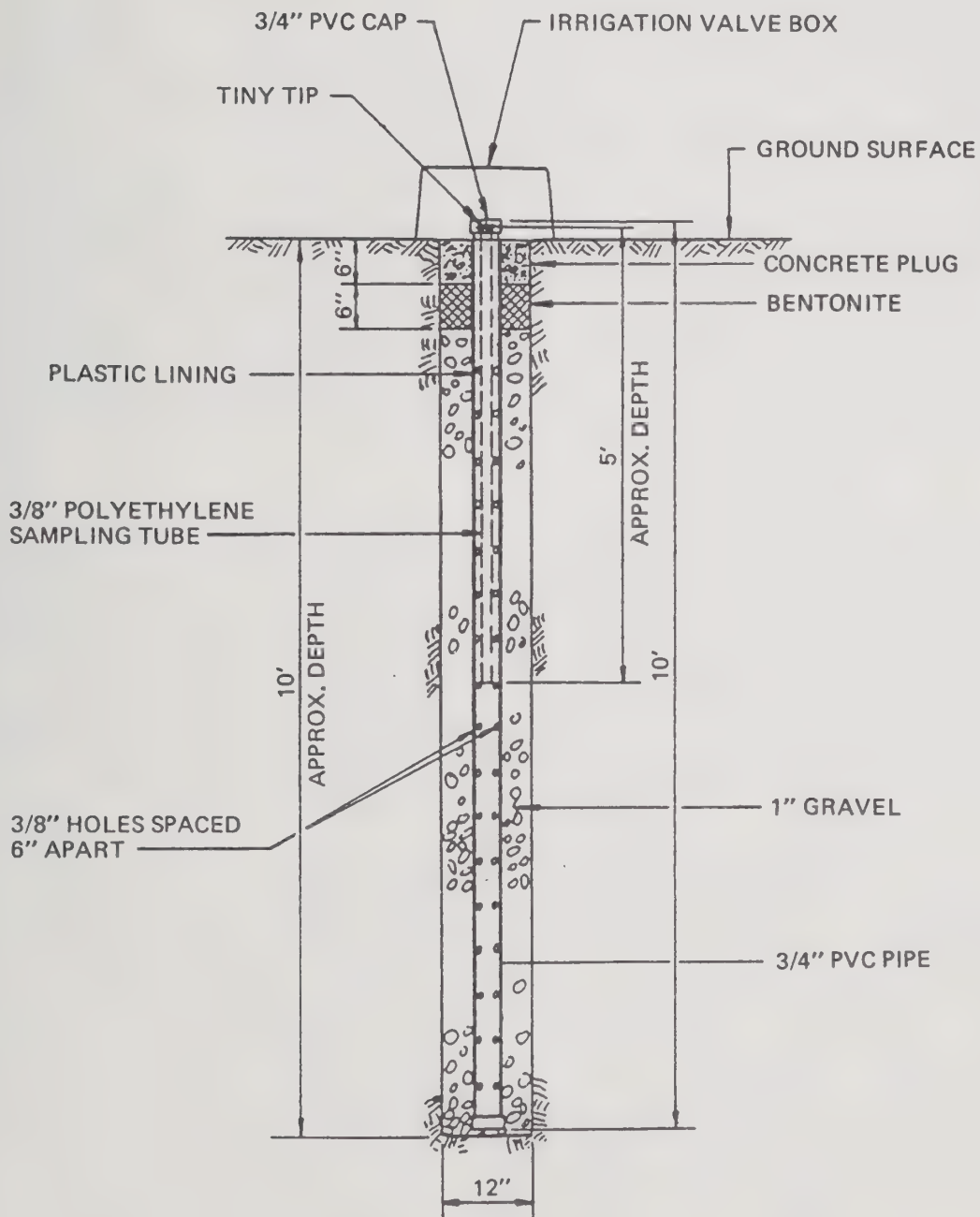
Source: Sanitation Districts, 1990.

Figure 3-19 Typical Gas Collection Trench



Source: Sanitation Districts, 1990.

Figure 3-20 Typical Gas Collection Well



Source: Sanitation Districts, 1990.

Figure 3-21 Typical Landfill Gas Monitoring Probe

Although the generation of gas in a sanitary landfill cannot be stopped, its lateral migration to adjacent areas and escape to the atmosphere can be controlled. As described in Chapter 4, the landfill gas control system planned for implementation at the potential landfill sites entails the use of low-permeability clay and synthetic liners to restrict the migration potential of the landfill gas. Additionally, a landfill gas recovery system would be installed in conformance with Rule 1150.1 of SCAQMD Rules and Regulations. To collect the landfill gas, vertical gas wells and horizontal trenches would be installed at various locations throughout the landfill. These wells and trenches would be connected to a blower through header pipelines. A vacuum would be applied, thereby creating a zone of negative pressure around each well or trench. The landfill gas from within these zones would be drawn into the collection system preventing its migration and escape to the atmosphere. Monitoring probes would be installed at the perimeter of the site to ensure effective operation of the gas collection system.

Initially, the landfill gas would be destroyed through combustion in landfill gas flaring stations. However, as the gas production increases, there are several landfill gas energy recovery alternatives that may be employed. The ability to dispose of the landfill gas in flares would always be maintained as a backup. However, utilization by off-site industries as a substitute for natural gas, combustion in gas boilers to produce steam for the generation of electricity as is now done at three existing Sanitation Districts operated landfills, or utilization in methanol production would be evaluated when sufficient landfill gas is produced.

The landfill gas collection and control system along with daily cover material minimize off-site odors from the proposed landfills. Odor can result from vertical migration and subsequent escape to the atmosphere of landfill gas or from allowing organic waste to remain exposed for extended periods of time. The potential for odor caused by landfill gas is from minor quantities of trace gases containing odor producing compounds, primarily short chain fatty acids and sulfur containing compounds. As previously described, the landfill gas collection and control system removes the landfill gas from the interior of the landfill for combustion. During the combustion of the gas, the potential for odor is eliminated. The practice of placing adequate cover material over newly placed refuse on a continuous basis also prevents odor generation. Continuous inspection for cracks in the cover soil and subsequent repair, as necessary, further ensure that the escape of gas through cover is prevented.

Incoming Waste Checking. All vehicles entering the site would be screened for hazardous materials as they pass through the weigh scales. No hazardous wastes as defined by the California State Department of Health Services would be accepted for disposal at the proposed sites. Measures would be taken to counteract the accidental or illicit disposal of hazardous materials at the landfill. A gamma scintillation counter capable of detecting the presence of very low levels of radioactive waste in the loads would be installed at the scale facility. An alarm would be set off when emissions in excess of 50 kilocounts/minute are detected. Suspect loads would be pulled aside and scanned again to ensure interferences did not cause a false alarm. When a load appeared to contain hazardous materials, a County health inspector would be called to the site and the suspect load would be taken to an isolated area of the site to be inspected. All identified radioactive materials are traced to the producer. The County Department of Health Services, serving as the Local Enforcement Agency (LEA), determines appropriate disciplinary action and acts accordingly.

In addition to initial screening at the scale facility, continuous inspection at the disposal area would also control illegal disposal of hazardous material. Full-time hazardous waste inspectors employed by the Sanitation Districts would continually screen the loads being unloaded and would identify potentially hazardous materials to an equipment operator.

A load checking program to monitor for hazardous wastes would also be implemented. Such a program has been successfully employed at Sanitation Districts sites for over 9 years. Thousands of loads have been checked in this program. Under a load checking program at the potential sites, each day five loads would be pulled aside on a random, unannounced basis and examined in detail by the trained inspectors. If concealed loads of hazardous waste are found, the loads would be transferred by licensed haulers to an appropriate hazardous waste disposal site. If it is determined by regulatory agencies that the waste cannot be safely removed without danger to employees or the general public, the waste would be carefully buried. The absorptive capacity of the refuse in the landfill is more than adequate to sequester the small quantities of hazardous material that infrequently must be buried under such circumstances. The LEA would be notified upon detection of hazardous materials and would determine appropriate disciplinary action for the hazardous waste transporter. In addition to the LEA, the State Department of Health Services, RWQCB, California Highway Patrol, and the County Districts' Attorney's Office would be notified of any special waste handling incidents. If appropriate, the Sanitation Districts would review the hauler's disposal privileges and in certain cases revoke such privileges.

Visual Access Control Measures. Visual access control measures would be taken to block views to refuse operations. The potential new landfills would be constructed inside existing tributary canyons with the fill grades approximately 100 feet below the ridge lines at the head of the canyon. Due to the presence of the ridge lines surrounding each potential landfill, the disposal operations at each site should not be in direct view with any of the surrounding communities or roadways. To ensure visual obstruction of the operating areas, the potential sites would incorporate earthen berms (mounds) placed at the top of the fill and along the front face. The berms would shield the operation from visual access and also serve as a noise barrier. The berms would become part of the front face final cover once they are landscaped.

Dust Control Measures. Throughout the working day, especially during dry or windy weather, the disposal area, excavation area, and haul roads would be sprayed with water to minimize dust. Permanent roads would be paved to reduce dust production and would be swept on a regular basis. Native vegetation would be allowed unrestricted growth to stabilize the topsoil in nonoperating areas.

Extremely dusty loads would not be admitted to the landfill sites unless they have been thoroughly wetted. A citation system would be implemented to control the disposal of dusty materials. Repeat violations would result in the denial of future disposal privileges.

Litter Control Measures. Litter would be controlled by the daily application of cover material and the use of portable litter fences in the vicinity of the working area. Sanitation Districts employees would routinely police the entrance area, all interior roads, and the access roads for litter and debris. The working area for landfill activities would be confined to as small an area as possible and would be moved to a more sheltered location if wind conditions dictate. A fine would be charged for uncovered loads arriving at the site with the potential to cause litter. Repeat violations would result in the denial of future disposal privileges.

Noise Control Measures. Noise levels generated as a result of landfilling operations may be considered as potential nuisance to residents living in the vicinity of a landfill. Currently, with the exception of the Mission Canyon site, few if any dwelling units exist near the potential landfills. The proposed project boundaries include as much as practical a large buffer area to prevent the development of properties adjacent to the landfill operation. At all of the potential sites, noise from landfill operations would be controlled and minimized by the following measures:

- Use of the best available mufflers for noise suppression on all site equipment.
- Use of quiet track systems on all crawler tractors.
- Use of earthen berms on the edge of the landfill top surface.

Vector Control Measures. Daily covering of all waste, along with an integrated control system, would be implemented to reduce the potential impacts of vectors at the proposed sites.

Birds. Control system elements such as compaction of the waste; application of daily and intermediate cover; application of vegetation to completed fill areas; and prevention of puddles, ponding, and other wet areas on site would minimize attraction of the birds to nonworking face areas of the landfill. For the working face, a proven system now in use at all Sanitation Districts landfills would be employed. This system includes limiting the size of the working face and the use of monofilament wires suspended above the operating area. The monofilament wires disrupt a seagull's landing pattern thus limiting access to the working face.

Flies, Rodents, and Insects. Potential health hazards can exist from the breeding of potential disease carrying insects or rodents. Fly and rodent studies at existing Sanitation Districts landfills have demonstrated that with proper operating procedures, conditions are not conducive to attracting and breeding of flies or other insects. Operating procedures that are the major factors in eliminating vector problems include adequate compaction and daily covering of waste with suitable cover material.

Fire Control Measures. The proposed landfill operations and design and construction of ancillary facilities would be carried out in compliance with the County and City of Los Angeles Fire Department's fire prevention regulations pertaining to "combustible waste disposal sites."

Fire extinguishers would be installed on all site equipment and vehicles for extinguishing small fires. "No Smoking" signs would be posted near the scale area and around any fuel tanks. Bare ground would be maintained around the disposal areas to provide a fire break, and a large-capacity water storage tank would be available on each of the sites to fill water vehicles. Additionally, fire hydrants would be provided, where feasible, at regular intervals around the perimeter of the site including the scale area.

In the event of a fire, local fire departments would immediately be alerted. Site water vehicles would be dispatched to the fire area to begin fire control. Crawler tractors would be utilized to cover exposed fires with cover soil that is transported to the fire area by earth moving equipment (scrapers).

Environmental Monitoring

The Sanitation Districts would establish a site inspection and maintenance program at the potential landfills designed to maintain the integrity of the facilities and environmental control features. As with many of the other operational elements at the potential landfills, the site inspection and maintenance program would be based on an established system used at existing Sanitation Districts operated landfills. The site inspection and maintenance activities would function as components in an overall environmental control program and would include routine inspection of all controls identified in Section 3.4.5.

Elements to be monitored include groundwater, the unsaturated zone, surface water, potential leachate, and landfill gas. Monitoring and performance evaluation would occur on a routine basis to assure compliance with regulatory standards and to serve as an early warning system in the event of localized landfill problems. The Sanitation Districts would assign an environmental engineer to coordinate the monitoring program.

Groundwater and Surface Water. Groundwater and surface water resources are associated with each of the potential landfill sites. A groundwater and unsaturated zone protection and monitoring program would be developed to comply with Title 23, Chapter 3, Subchapter 15 requirements. It is the responsibility of the RWQCB to approve a groundwater, unsaturated zone, and surface water monitoring program for the potential landfill sites prior to issuance of waste discharge requirements. Surface water samples would be collected from upstream and downstream locations.

Landfill Gas. The landfill gas monitoring program at the potential landfills would consist of gas monitoring probes installed around the perimeter of the site. The probes would provide a means for sampling subsurface gases and determining the effectiveness of the landfill gas control system in preventing subsurface landfill gas migration. The probes would be monitored a minimum of once every 3 months. The gases collected through the probes would be analyzed for methane and oxygen by portable gas analyzers. Additional parameters would be monitored as required by the CIWMB or the LEA.

If the landfill gas monitoring program indicates landfill gas migration either on the existing landfill property or on adjacent property, corrective measures would be taken and the monitoring frequency increased. Generally, corrective measures would be in the form of additional landfill gas withdrawal in the area where the gas migration was detected.

In addition to subsurface monitoring, the Sanitation Districts have implemented a technique to measure the surface flux of landfill gas through the soil cover with an organic vapor analyzer. The objective of this element of the landfill gas monitoring program is to detect points of concentrated landfill gas release through the surface so that corrective measures can be taken rapidly, minimizing odor escape and complying with SCAQMD Rule 1150.1.

Closure and Postclosure Requirements

The potential new landfills would be closed according to a closure and postclosure plan that is subject to approval by the RWQCB, LEA, and CIWMB. A draft of the plan would be included in the Report of Waste Discharge. All closure activities would be monitored and certified by a California registered civil engineer or registered geologist.

Grading and Final Cover. Figures 3-11 to 3-14 show the final grades to be achieved at completion of closure activities. The final configuration on the sites would be defined by the surrounding topography, slope, stability considerations, and minimum gradients to provide adequate drainage of the completed landfills after anticipated settlement. The final soil cover would comply with all cover requirements and regulations in effect at the time of closure.

As segments of the landfills are brought to final grade, final cover would be placed and planted under provisions for partial closure. Detailed construction guidelines for placing the soil components would be developed to provide the construction control needed to complete the final cover in accordance with the closure plan. Each fall, before winter rains, the new segments of the final soil cover would be seeded with shallow-rooted, erosion-resistant vegetation native to the surrounding area.

A postclosure maintenance and monitoring program would be instituted to verify that containment and monitoring facilities have retained their integrity. Surface drainage control facilities, final vegetated soil cover areas, leachate monitoring, landfill gas monitoring, and the water quality monitoring plan for the sites, would be implemented in cooperation with the RWQCB as part of the anticipated postclosure waste discharge requirements.

In general, the evaluation program would consist of routine monitoring for evidence of:

- Ponded water at any point on the disposal site.
- Erosion and exposed refuse.
- Leachate and/or water entering or leaving the disposal site.
- Any site facilities needing maintenance, including drainage structures, final cover, leachate removal facilities, and surveyed monuments.

Any deficiencies found during the periodic inspections would be corrected at the earliest possible opportunity.

The final land use for each landfill after site closure would be recreational open space. This would be consistent with current land uses on surrounding properties. The landfill final cover would be planted with appropriate materials to blend with the adjacent hillside and enhance its value as open space.

Closure and Postclosure Funding. Financial requirements for closure and postclosure maintenance for the proposed landfills are contained in CCR, Title 22, Article 17. This section stipulates that the facility operator must pass a "financial test," guaranteeing that adequate funds would be available for closure and postclosure monitoring and maintenance activities.



CHAPTER 4

Environmental Setting, Impact Analysis, and Mitigation Measures

CHAPTER 4

ENVIRONMENTAL SETTING, IMPACT ANALYSIS, AND MITIGATION MEASURES

This chapter analyzes the environmental impacts of the Integrated Solid Waste Management System (Integrated System) for Los Angeles County that was described in Chapter 3, Project Description. Eleven subsections are included on different issue areas. Within each issue area, the potential impacts and mitigation measures are discussed for waste diversion and three potential landfill sites (Blind Canyon, Towsley Canyon, and Mission-Rustic-Sullivan Canyons). Potential cumulative impacts resulting from the development of two or more potential sites are addressed as well. However, these regional impacts could be experienced with or without the proposed program if the solid waste generated is disposed in the metropolitan area or at other locations.

4.1 LAND USE, PLANS, AND POLICIES

This section reviews the land use issues associated with waste diversion and the potential landfill sites. Issues include consistency with plans and policies, and land use conflicts.

4.1.1 Waste Diversion

Land use issues as related to waste diversion activities center around technical conformance to city and county planning and zoning ordinances as well as compatibility with surrounding land uses. The following is a discussion of these issues for collection and intermediate handling and ultimate processing. It should be noted that land use permits and/or zoning variances may be required for these activities, as well as technical operating permits.

Impacts and Mitigation Measures

Potential environmental impacts are mentioned below only in the context of land use compatibility. For further discussion on specific impact areas, refer to subsequent sections.

Collection and Intermediate Handling. Implementation of the waste diversion component of the Integrated System in working toward compliance with AB 939 diversion goals will not necessarily result in an increase in the number or size of

certain collection or handling methods. However, the increase in diversion will result in an increased variety of diversion opportunities available to the public and commercial community. More than likely a combination of the facilities listed below would be sited in order to provide maximum flexibility and therefore, maximum diversion.

Curbside Collection Materials Storage Yard. Curbside collection programs require a storage yard in order to hold materials after pick up from the resident and prior to transport to redemption centers or recycling plants. The area needed would be dependent on the market conditions, in that during periods of slow or developing markets, larger storage areas may be advantageous. Typically, existing municipal facilities (e.g., equipment yards) could be utilized for this purpose thereby minimizing conflicts with zoning or land use requirements.

Drop-off Stations. Drop-off stations/bins are usually located on existing land uses such as parking lots. The stations have minimum area requirements, depending on the type and variety of materials accepted. The potential does exist for production of litter and thus public resistance to siting. Although these bins must be located in proximity to residential areas for convenience, potential impacts and incompatibility can be overcome with regular maintenance of the area and timely removal of materials. Special zoning is not required for these facilities.

Buy-back Centers. Area requirements for buy-back centers depend upon the service area, whether a neighborhood or a community. Typically these centers require one-half to one acre of land primarily for parking and materials handling. Buy-back facilities are consistent with most existing commercial zoning, which would provide ample potential site locations. The potential for increased noise and traffic levels should be considered in choosing a location. Some competition would potentially exist between the buy-back centers and the certified AB 2020 redemption centers. Buy-back centers, possibly accepting a greater variety of materials at possibly a better refund value, would have a detrimental effect upon the number of customers utilizing the AB 2020 center. However, the situation would be dependent on several other factors, including whether or not a curbside program was available to the public and location of both types of centers throughout the community.

Material Recovery Facilities. Because of larger land requirements (up to 10 acres) and the industrial nature of receiving and handling recyclables at a material recovery

facility, appropriate zoning/locations are more restrictive than for the diversion methods mentioned above, and, therefore, less available. These facilities could handle significant quantities of waste, increasing the variety and magnitude of potential impacts, and thus compatibility with surrounding land uses. However, inasmuch as these facilities are typically sited in areas of existing industrial activity and that potential impacts could be mitigated depending upon the site specific conditions, inconsistencies with local plans would not be expected. It should be noted that even in cases where appropriate land is available, and consistency with surrounding land uses has been demonstrated, public opposition to the siting of these facilities could be a factor.

Ultimate Processing. Implementation of the waste diversion component of the Integrated System would cause an increase in recycling facilities/processing plants construction and expansion in the county. Land use issues related to this activity are discussed briefly below.

Processing Plants. Processing plants, such as paper recycling plants, require specific industrial zoning for location, which on a regional scale in Los Angeles County would be available. Less public opposition to such plants might be expected due to the traditional industrial nature of the operation versus a refuse handling facility; however, concerns regarding air emissions or wastewater discharges might be expressed.

Composting Facilities. Although specific zoning designations do not exist for composting, commercial/industrial, or light agriculture designations could be deemed appropriate. Despite the fact that such zoned areas may be available in communities, relatively large land requirements may limit the use of properly zoned areas for composting. Community concern for the siting of these facilities would exist regarding potential environmental impacts such as odor, litter and groundwater contamination.

4.1.2 Issues Common to all Landfills

The following section presents a discussion of the general planning policies and land use jurisdictions that are relevant to the siting of the potential Blind, Towsley, and Mission-Rustic-Sullivan Landfills. Site-specific land use designations are described in subsequent sections.

Los Angeles County General Plan

The County of Los Angeles General Plan designates portions of the potential landfill sites as Significant Ecological Areas (SEAs). Development of a landfill within an area designated as an SEA may be permitted if the following conditions of the General Plan are met:

1. Public and semipublic uses "essential to the maintenance of public health, safety and welfare" may be permitted if no alternative site or alignment is feasible.
2. The project can be conditioned to ensure "protection of identified ecological resources" is determined feasible by detailed biotic surveys.

The Sanitation Districts would request an amendment to the General Plan deleting the affected portions from SEA designation.

It should be noted that Government Code, Section 66796.41 requires that "a site for any new or expanded solid waste facility shall be found to be consistent with the general plan only if both of the following requirements are met:

1. The site is located in a land use area designated or authorized for solid waste facilities in the applicable City or County general plan.
2. The land use authorized adjacent to and near the site is compatible with the establishment or expansion of the site."

Other general land use designations in and around the potential landfills are discussed below:

The Open Space Element of the County General Plan has as its goal the preservation and protection of sites of "scenic value" (General Plan, pg. OS-10). Policies have been adopted to carry out this goal which encourage the use of open-space easements and dedications to protect scenic values and place a priority on the protection of scenic view from vantage points along public roads and trails (pg. OS-11).

Within areas designated nonurban (R), a range of development options is permitted that does not require an urban level of service or does not disturb the character of existing nonurban communities or developments. Solid and liquid-waste disposal sites are public or semipublic uses

typically considered appropriate uses in R, nonurban areas. However, the General Development Policy more specifically designates these R areas as "nonurban hillside" areas, which can sustain some residential development whose density depends on the degree of natural slope.

Development along adopted and proposed Scenic Highways is required to be reviewed for consistency with design criteria that are a part of the Land Use Element of the General Plan. These design criteria include requirements for:

- Creating consistent visual relationships with the landscape in order to complement and enhance views.
- Locating unsightly features in areas not visible from the highway or screen by appropriate means.
- Performing grading operations so that the final result is compatible with existing terrain.
- Minimizing the number of access roads from the scenic highway.

Additional criteria and standards can be developed for a specific road or road segment after it has been adopted as a Scenic Highway.

Los Angeles County Zoning Ordinance

The Los Angeles County Zoning Ordinance designates zoning based on site specific locations. Accordingly, zoning designations in and around the potential landfill sites is discussed in the site specific sections.

Ventura County General Plan

The goals, policies, and programs of the General Plan set for the preservation of Ventura County's scenic resources include:

- Preservation and protection of significant open views and visual resources.
- Protection of visual resources within the viewshed of designated scenic highways and lakes.
- Revegetation along scenic highway areas using native plants indigenous to the area.

- Seeking official state scenic highway designations for County-designated scenic highways.

Ventura County Zoning Ordinance

The Ventura County Zoning Ordinance designates all the County land within the Blind Canyon project boundary and the surrounding area as Open Space with a 160-acre minimum parcel size in conformity with its General Plan designation.

Water Quality Control Plans

The California Porter-Cologne Water Quality Control Act and the Federal Water Pollution Control Act Amendments of 1972 required that Water Quality Control Plans (Basin Plans) be prepared for each of the nine hydrographic basins in the state. The purpose of the Basin Plans is:

1. To designate the beneficial use of the basin's water resources, including groundwaters and both fresh and marine surface waters.
2. To set forth water quality objectives to protect or restore beneficial uses.
3. To establish implementation plans to achieve these water quality objectives.
4. To set up surveillance programs to monitor the effectiveness of the implementation plans.
5. To serve as a basis for establishing eligibility requirement for state and federal grant funding in the construction and improvement of wastewater treatment facilities.

As discussed in Section 4.2, beneficial uses and water quality objectives have been established for surface and groundwaters in the vicinity of the potential landfills. The Basin Plans contain no policies specific to planning for landfills. However, to be consistent with the Basin Plan, the potential landfills must not cause a deterioration of beneficial uses or cause water quality objectives to be exceeded.

Air Quality Management Plan

For a project to be considered consistent with the South Coast Air Quality Management District's (SCAQMD) Air Quality Management Plan (AQMP), it must conform to the local agency's general plan and to the guidelines of the Southern California Council of Governments (SCAG). These SCAG guidelines are

primarily addressed to wastewater facilities, transportation systems, and residential/office developments that increase population or employment in a specific area (i.e., growth-oriented developments). The potential landfills are not considered to be a growth-inducing development. In addition, the potential landfills are consistent with these SCAQMD's policies since the project would (1) serve to alleviate an anticipated shortfall in landfill capacity (see Chapter 5, Section 5.2), (2) would satisfy existing waste disposal needs as well as accommodate planned growth and development in the region, and (3) comply with SCAQMD rules and regulations regarding pollutant emissions (see Section 4.6). In order to be considered consistent with the AQMP, the potential landfill sites must be designated as potential landfill sites in the appropriate County General Plan.

Additional jurisdictional ordinances and/or plans are presented in the following site specific discussions.

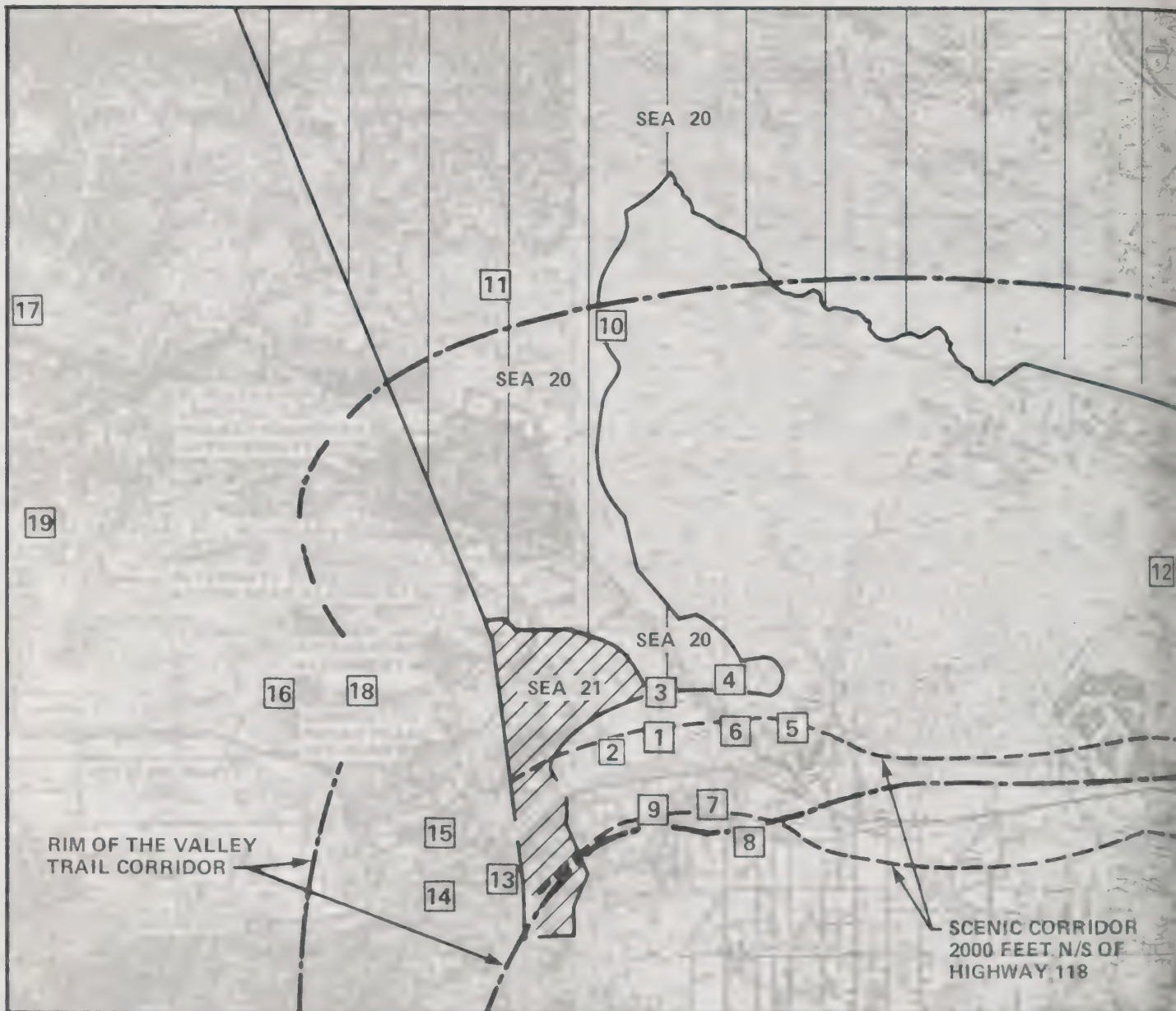
4.1.3 Blind Canyon

Setting

The landfill site is located north of the Simi Valley-San Fernando Valley Freeway (State Route 118) at the Ventura County border with Los Angeles County. Most of the site lies within unincorporated Los Angeles County. However, as noted on Figure 4.1-1 the western portion of the site and portions of the access corridor, including the connection with the freeway at the Rocky Peak Road off-ramp, lie with unincorporated Ventura County. Land use information on the figure is discussed later in this section.

Undeveloped mountainous terrain lies to the north and west of the potential landfill site. As will be discussed later in this section, development, including single and multifamily residences and church facilities, has occurred in flat areas outside of a mile from the base of the canyon walls west and south of the landfill site both north and south of the freeway. The topography generally flattens toward the northeast. However, the elevation to the west drops off sharply outside the project boundary. Although the landfill itself is not exposed to view from the west, portions of the access road may be visible from Highway 118 and from the eastern portions of the City of Simi Valley.

Land Use Designations and Zoning. Land use designations and zoning that exist in and around the potential Blind Canyon Landfill site are the result of planning policies and programs of three jurisdictions: Los Angeles County, Ventura County, and the City of Los Angeles. Relevant plans and zoning ordinances are discussed below.



LEGEND

- | | |
|--|---|
| 1. INDIAN WELLS ESTATES (RESIDENTIAL SUBDIVISION) | 11. LA QUINTA RANCH |
| 2. INDIAN FALLS/INDIAN SPRINGS (RESIDENTIAL SUBDIVISION) | 12. PORTER RANCH DEVELOPMENT AREA |
| 3. FERN ANN FALLS (RESIDENTIAL SUBDIVISION) | 13. DEVELOPED COMMUNITY OF 36 SINGLE-FAMILY HOMES |
| 4. DEVILS CANYON STATE PARK | 14. UNINCORPORATED COMMUNITY OF SANTA SUSANA |
| 5. TWIN LAKES (RURAL COMMUNITY) | 15. SAND AND GRAVEL QUARRY |
| 6. SUMMERSET VILLAGE (APARTMENT COMPLEX) | 16. HUMMINGBIRD RANCH |
| 7. INDIAN HILLS (MOBILE HOME PARK) | 17. MARR RANCH |
| 8. STONEY POINT STATE PARK | 18. POLICE FIRING RANGE |
| 9. DEVELOPED AREA ALONG SANTA SUSANA PASS ROAD | 19. MINOR OIL DEVELOPMENT ACTIVITY |
| 10. CIVILIAN CONSERVATION CORP CAMP AT OAT MOUNTAIN | |
- NOTES
 1. SEE TABLE 4.1-1 FOR DESCRIPTION OF THE LAND USES
 2. BLIND CANYON IS IN SIGNIFICANT ECOLOGICAL AREA (SEA) 20

Source:
 Brown and Caldwell, 1989.
 Los Angeles and Ventura Counties,
 General Plans.

Figure 4.1-1 Land Use in the Blind Canyon Landfill Site Area

Los Angeles County General Plan. Most of the land within the landfill project boundary lies within Los Angeles County and within Significant Ecological Area (SEA) 20. The Santa Susana Mountains SEA 20 is described in the County General Plan as containing "the main representative of . . . small dry interior mountain ranges in Los Angeles County." Medium intensity recreational uses are described as compatible with the resources of SEA 20. Other uses may be compatible after detailed biotic evaluations are conducted. Such uses include "public and semipublic uses essential to the maintenance of public health, safety and welfare" where "no alternative site or alignment is feasible." The General Development Policy for the County, which addresses issues of urban growth, also designates the SEA area within the landfill project boundary.

The area in Los Angeles County between the project's southern border and the freeway is designated either SEA 21 or R, nonurban. The Santa Susana Pass SEA (SEA 21) extends south along the Ventura County border and north and northeast of the project boundary. The R designation (nonurban) surrounds the southeastern and southern boundaries of the project.

SEA 21 lies adjacent to the Ventura County border. The Santa Susana Pass SEA protects the Santa Susana tarplant (*Hemizonia minthornii*), a state listed rare plant. This SEA is also termed an "important" wildlife migration route between the San Fernando and Simi Valleys and the Simi Hills and the Santa Susana Mountains.

The area directly south of the freeway, south and southwest of the potential landfill site, was recently annexed to the City of Los Angeles and is not yet part of a designated City planning area. Therefore, the County land use designations are used. Most of the area is designated I, major industrial, with small R and O areas along the freeway.

Twelve miles of Highway 118, from the Ventura County line to about 3 miles east of Topanga Canyon Boulevard, is designated as a First Priority road segment for adoption as a Scenic Highway (Figure 4.1-1). A scenic corridor extends 2,000 feet north and 2,000 feet south of the highway. Santa Susana Pass Road from the County line to Topanga Canyon Boulevard is designated as a Second Priority road segment for adoption as a Scenic Highway. These designations indicate that these portions of Highway 118 are considered candidates for future designation as Scenic Highways through a Countywide planning effort for scenic corridors as a basis for guiding a "consistent course of

action in development of an integrated network of scenic highways throughout the County." (County of Los Angeles General Plan, Map C-3 "Scenic Highways".)

A portion of the R area to the southeast of the project boundary contains an area designated R, nonurban with a rural community designation, and includes the community of Twin Lakes. Small areas of land within the area southeast and south of the project site are designated O, open space and I, major industrial.

A mix of small areas south and southeast of the project boundary along both sides of Highway 118 are given a mix of development policy designations including 2, urban conservation/maintenance; 3, urban in-filling; 4, urban expansion; 5, urban open space; and 8, other nonurban and agricultural.

Los Angeles County Zoning Ordinance. The Los Angeles County Zoning Ordinance designates the project site as A-2-2. This designation allows for crops as well as heavy agricultural uses, including animal hospitals, dairies, dog kennels, livestock feed lots, and oil wells. A landfill may be sited within this zoning with a conditional use permit. Residential uses are permitted. The minimum allowable lot size is 2 acres. The zoning designations for land in Los Angeles County surrounding the project are a mixture of A-2-2, A-1-5, A-1-1, A-1-DP, RPD-10,000/4U, and R-1-6000.

Ventura County General Plan. The Ventura County General Plan designates the portions of unincorporated Ventura County within the potential landfill project boundary as open space with a minimum parcel size of 160 acres. A Southern Pacific rail line runs south of Highway 118 and crosses the border into Ventura County. The portions of unincorporated Ventura County north of the rail line are in open space, O.S., with a minimum parcel size of 160 acres. The area in Ventura County south of the rail line is designated as O.S., with an urban reserve qualifier. All of this land designated O.S. is within the sphere of influence of the City of Simi Valley. A variety of uses are permitted within the open space land use designation that relate to agriculture, residential, commercial, recreation, water supply, and waste treatment.

Ventura County Zoning Ordinance. All of the Ventura County portion of the Blind Canyon site is zoned Open Space with a 160-acre minimum parcel size. A landfill may be sited on land within this zoning with a conditional use permit.

Santa Monica Mountains Conservancy. The Mountains Recreation and Conservancy Authority (exercising the joint powers of the Conservancy and the Rancho Simi Recreation and Park Districts) has signed a Memorandum of Understanding (MOU) with a major property owner. This MOU calls for the transfer of land, which includes much of Blind Canyon, from private to public ownership. Such a transaction would conflict with the development of the canyon as a landfill site.

The entire site is also within the Rim of the Valley Corridor Trail area, which contains parks and trails connecting the Santa Monica Mountains to all the mountains surrounding the San Fernando Valley. The Rim of the Valley Corridor Trail area is an area especially sensitive to visual and wildlife impacts. A Rim of the Valley Trail is envisioned by the Conservancy to connect all these areas. Because of visual conflicts between landfill operations and recreational uses of a trail along the ridgeline, there is a potential for inconsistency between planned landfill development and planned trails.

Existing Land Use. Land uses that exist within and around the potential Blind Canyon Landfill site consist primarily of open space, livestock grazing, and various residential uses as noted in Figure 4.1-1. These uses are described below.

Project Site. The Blind Canyon project site is currently in open space with limited cattle grazing.

Surrounding Land Uses. Table 4.1-1 summarizes the existing land uses which surround the potential Blind Canyon Landfill site, while Figure 4.1-1 shows their general locations. As can be seen from the figure, most of the area surrounding the Blind Canyon site, including the land in Ventura County, is uninhabited with the closest residential development (Indian Wells Estates) being 4,800 feet south of the final fill boundary. A variety of residential, commercial, and park uses exist south of Highway 118, about 2 miles south of the landfill project boundary. As indicated on Figure 4.1-1, there is some residential development in Ventura County along the Santa Susana Pass Road, near where the landfill access road would depart from Highway 118.

Related Projects/Projected Population. A cumulative projects list was developed from information provided by the planning staffs from the Los Angeles County, City of Los Angeles, Ventura County, and the City of Simi Valley. The list provides reasonable estimates of future development.

**Table 4.1-1 Description of Surrounding Land Uses in the
Blind Canyon Area**

Surrounding land use (existing)	Designation on Figure 4.1-1	Description
Indian Wells Estate (residential subdivision)	1	Large lot subdivision with 71 homes on 338 acres (under construction).
Indian Falls/Indian Springs (residential subdivision)	2	Large lot subdivision with 106 lots (under construction).
Fern Ann Falls (residential subdivision)	3	Subdivision consisting of 8 homes on large lots. Existing community includes the Bar None Ranch, which houses the Institute for Equestrian Therapy.
Devils Canyon State Park	4	-
Twin Lakes (rural community)	5	Total of 304 residential lots of which 98 are developed and 206 are being proposed.
Summerset Village	6	Recently completed 507-unit apartment complex north of 118 Freeway.
Indian Hills	7	One hundred thirty-eight-unit mobile home park.
Stoney Point State Park	8	-
Developed area along Santa Susana Pass Road	9	Mixed development area containing residences, church, school, and parks.
Civilian Conservation Corps Camp at Oat Mountain	10	-
La Quinta Ranch	11	-
Porter Ranch Development Area	12	Rapidly growing residential/light commercial area.
Residential community	13	Thirty-six single-family homes.
Residential community	14	Unincorporated community of Santa Susana
Industrial	15	CZ5 Corporation Sand and Gravel Quarry
Hummingbird Ranch	16	Former horse breeding ranch, now abandoned
Marr Ranch	17	Ranch in agricultural reserve, owners have indicated they do not intend to renew status
Police firing range	18	Simi Valley Police Department
Minor oil development activities	19	Union Oil

Source: Brown and Caldwell, 1989

Reasonably Foreseeable Projects. Table 4.1-2 lists the reasonably foreseeable projects in the area of Blind Canyon. Figure 4.1-2 shows their locations. The list includes several single development projects, the future development of the Porter Ranch area, and a series of public park development plans. In particular, the Santa Monica Mountains Conservancy, a State agency that acquires and manages land in the Santa Monica Mountains and the Rim of the Valley Trail Corridor for park, recreation, and conservation purposes has developed a list of priority projects for acquisition in the area of the intersection of Highway 118 and the Ventura County line. Of concern for the potential Blind Canyon project are the properties proposed for acquisition that lie north of the freeway between its intersection of Santa Susana Pass Road in Ventura and Los Angeles Counties and in the area of intersection between Topanga Canyon Road and the freeway in Los Angeles County.

In April 1990, a major property owner in the Blind Canyon area signed a MOU with the Mountains Recreation and Conservancy Authority (MICA) which calls for the transfer of land within Blind Canyon to the MICA. The MICA is a public agency exercising the joint powers of the Santa Monica Mountains Conservancy and the Conejo and Rancho Simi Recreation and Park Districts. The MOU outlines the immediate gift of approximately 700 acres of land which lies within Los Angeles County and the arrangement of an option to purchase the remainder of the land, which lies within Ventura County.

Projected Population. An estimate of the projected population in the area of the potential Bind Canyon Landfill has been calculated based on projected build-out of residential units at the current zoning and under the current general plan designations. It is estimated that approximately one-third of the projected population growth within the Chatsworth-Porter Ranch District of Los Angeles County will take place in the portion of Porter Ranch north of Highway 118, resulting in 38,750 additional people in this area. The SEA area south of Blind Canyon within Los Angeles County could see an additional 2,534 additional people on 3,840 acres. the residentially zoned areas south and east of Blind Canyon could see an additional 660 to 6,600 additional people on 4,000 acres depending on the locations of dwellings relative to the degree of hillside slope. No residential development is expected to the north of the Canyon because of the rough terrain and lack of access. The area in the City of Los Angeles south of Highway 118 could accommodate an additional 5,000 people at

**Table 4.1-2 Reasonably Foreseeable Projects List for the
Blind Canyon Landfill Site Area**

Designation on Figure 4.1-2	Size, acres	Description
<u>Private Development Projects</u>		
1	338	Indian Wells Estates CUP 86-070(s). ⁷¹ "Estate size "single-family homes on 338 acres. Construction has begun on three residences.
2	a	Two hundred seventy one residential units planned for the Twin Lakes Community north of Canoga exit from the freeway.
3	1,300	Porter Ranch Specific Plan calls for 2,195 single-family residences; 800 multifamily residences; and 7.7 million square feet of office, retail, and other nonresidential uses.
<u>Planned Public Park Developments and Acquisitions</u>		
4	428	Addition to the Santa Susana Mountains State Park unit near the Santa Susana Pass south of Highway 118 freeway.
5	0.19	Corrigan Park south of Highway 118 between Rocky Peak and the Simi Hills and on the border of Ventura and Los Angeles Counties. One hundred ninety- acre site owned by the Rancho Simi Open Space Conservation Agency; development plans are underway.
6	70	Stoney Point North
7	54.48	Chatsworth Gate
8	10.27	Oak Valley
9	4.47	Lilac Silver
10	443.36	Southport Property
11	25.36	Altamini Property
12	83	Altamini Property
13	120	Chatsworth Peak
14	21	Duke Property
15	20.02	Pass Club (a)
16	15.7	Pass Club (b)
17	2.8	Reaner Property
18	2.69	Krebs Property

**Table 4.1-2 Reasonably Foreseeable Projects List for
Blind Canyon Landfill Site Area (continued)**

Designation on Figure 4.1-2	Size, acres	Description
<u>Planned Public Park Developments and Acquisitions (continued)</u>		
19	24	Railroad Property
20	0.34	Hopetown Inholding
21	19.50	Boydston Properties
22	13.09	Deer Crossing
23	407.35	Clejan Property
24	10	Highlands Lots

^aData not available.

Source: Planning staffs from Los Angeles County, City of Los Angeles, Ventura County, and the City of Simi Valley.

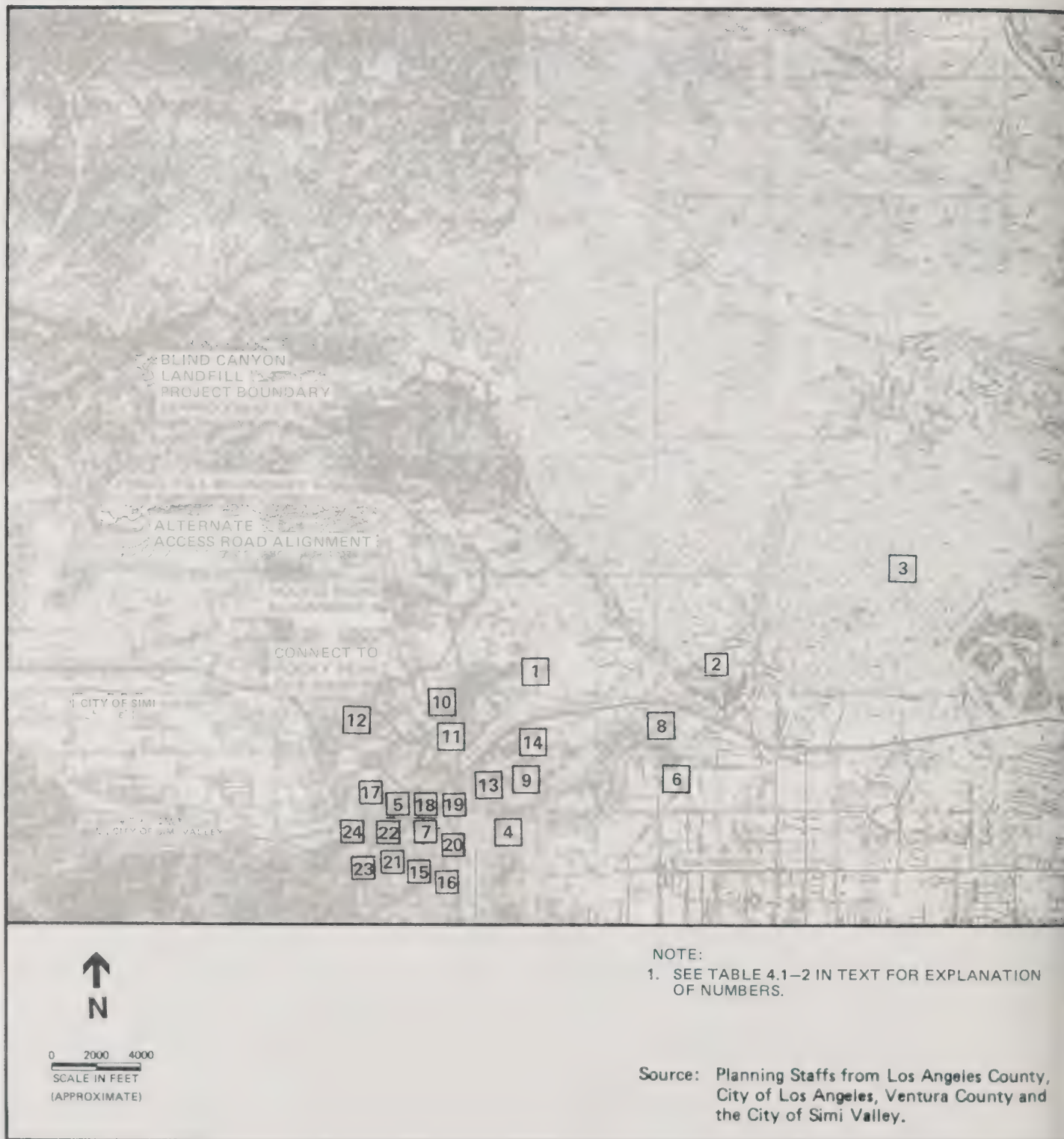


Figure 4.1-2 Reasonably Foreseeable Projects in the Blind Canyon Landfill Site Area

full build-out. For most of the terrain in Ventura County near the project area, no residential development is expected.

4.1.4 Towsley Canyon

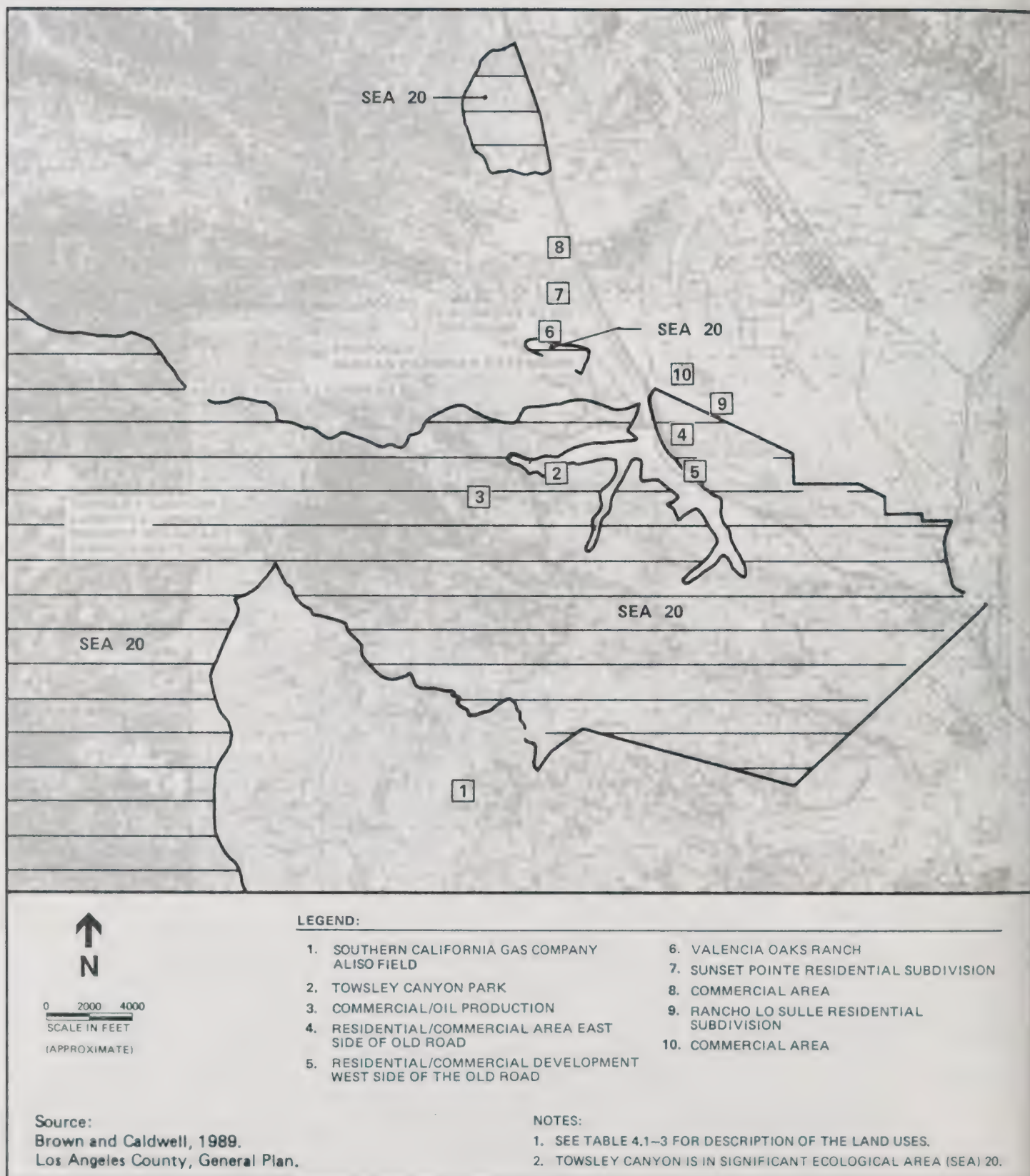
Setting

The potential Towsley Canyon Landfill is located west of I-5 at Calgrove Boulevard, north of the intersection of the Antelope Valley Freeway (State Highway 14) and the Golden State Freeway (Interstate 5). As noted in Figure 4.1-3 all of the projected boundary lies within unincorporated Los Angeles County. Undeveloped mountainous terrain lies to the west of the landfill site. The major development areas are east and north. Land use information shown on the figure is discussed later in this section.

Land Use Designations and Zoning. The potential Towsley Canyon Landfill site lies within only one planning jurisdiction--Los Angeles County. Relevant plans and zoning ordinances are discussed below.

Los Angeles County General Plan. The project site lies within SEA 20, the Santa Susana Mountains (Los Angeles County General Plan, Map LU-01). Sea 20 is described as containing "the main representative of . . . small dry interior mountain ranges in Los Angeles County." Medium intensity recreational uses are described as compatible with the resources of SEA 20. Other uses may be compatible after a detailed biotic evaluation has been conducted. Such uses include "public and semipublic uses essential to the maintenance of public health, safety and welfare" where "no alternative site or alignment is feasible."

Land to the west and south of the project site is also within the SEA 20, as is a small area north of the project site. South of the SEA, the area is designated R, non-urban. Another small piece of land north of the project site is designate C, open space. Land north of the SEA and south of the Pico Canyon development area is designated HM, hillside management. Land within the Pico Canyon Boulevard development area has received a mixture of residential, commercial, and open space designations. An 11-mile portion of Interstate 5, the Golden State Freeway, north from its intersection with Interstate 210 to its intersection with Highway 126, is designated as a First Priority road segment for adoption as a Scenic Highway. These designations indicate that this portion of Interstate 5 is considered a candidate for future designation as a Scenic Highway through a Countywide planning effort to identify



scenic corridors as a basis for guiding a "consistent course of action in developing an integrated network of scenic highways throughout the County." (County of Los Angeles General Plan, Map C-3 "Scenic Highways.")

Los Angeles County Zoning Ordinance. The Los Angeles County Zoning Ordinance designates most of the land within the potential Towsley Canyon Landfill site as A-2-2, heavy agriculture with a minimum lot size of 2 acres. This designation allows for crops as well as heavy agricultural uses, including animal hospitals, dairies, dog kennels, livestock feed lots, and oil wells. Residential uses are permitted. Part of the potential access corridor on the east is zoned R-R, resort and recreation and A-2-1, agriculture with a minimum parcel size of 1 acre.

Two small areas in the potential access corridor are zoned R-4, resort and recreation and A-2-1, agriculture. A landfill may be sited on land with any of these three zoning designations with a conditional use permit.

Santa Monica Mountains Conservancy. The Conservancy as part of a joint powers agency with the Mountain Recreation and Conservation Authority has established 145 acres of land at the entrance to Towsley Canyon as a park, and a first step towards the creation of a proposed 6,000-acre Santa Clarita Woodlands State Park. This area would encompass the access corridor to the proposed landfill as well as ridgeline hiking areas. Additionally, a portion of the southern part of the site, including the ridgeline, is within the Rim of the Valley Corridor area, which contains parks and trails connecting the Santa Monica Mountains to all the mountains surrounding the San Fernando Valley. A Rim of the Valley Trail connecting all these areas is envisioned by the Conservancy.

Existing Land Use. Land uses within and around the Towsley Canyon Landfill site consist primarily of open space with scattered residential and commercial areas. These uses are described below.

Project Site. The potential Towsley Canyon Landfill site is currently in open space. A dirt road enters the landfill site from the east at the Old Road.

Surrounding Land Uses. Table 4.1-3 summarizes the existing land uses which surround the potential Towsley Canyon Landfill site, while Figure 4.1-3 shows their general locations. As can be seen from the figure, most of the area surrounding the landfill site is uninhabited. The Southern California Gas Company Aliso Field is to the

**Table 4.1-3 Description of Surrounding Land Uses in the
Towsley Canyon Area**

Surrounding land use (existing)	Designation on Figure 4.1-3	Description
Southern California Gas Company Aliso Field	1	Major gas storage facility in Southern California.
Towsley Canyon Park	2	0.6 mile in on south side of existing dirt road. Includes approximately 145 acres.
Commercial/oil production	3	Remnants of oil production, including several seeping wells, drums, equipment, and tanks about 1.9 miles in on both sides of existing dirt road.
Residential/commercial	4	Calgrove Kennels, trailer and amusement park, a single family residence, and a ranch with outbuildings on east side of the Old Road.
Residential/commercial	5	Two single-family residences, store, church, commercial storage facility, fish farm, and a vacant parcel on west side of the Old Road.
Valley Oaks Ranch	6	Horse breeding and boarding facility.
Residential	7	Sunset Pointe with about 200 new single- family residences.
Commercial	8	Various uses including restaurants, gas station, motel, office building, and shopping plaza.
Residential	9	Rancho LaSalle, a gated residential community.
Commercial	10	Two automobile dealerships and a restaurant.

Source: Brown and Caldwell, 1989.

southeast near the landfill project boundary. A former residence, located about 6,000 feet from the landfill project boundary, a watchman's trailer, and remnants of previous agricultural and oil development activities border the existing dirt access road. The nearest residential/commercial development is located to the northeast, about 6,000 to 8,000 feet from the proposed landfill area. The proposed access road would be immediately to the north and west of the new Towsley Canyon Park which was created in November 1989.

Related Projects/Projected Population. A cumulative projects list was developed that provides reasonable estimates of future development in the project area. This information was developed with the cooperation of the planning staffs from Los Angeles County and the City of Santa Clarita.

Reasonably Foreseeable Projects. Table 4.1-4 lists the reasonably foreseeable projects in the area of the potential Towsley Canyon Landfill and Figure 4.1-4 shows their locations. This list includes a series of residential and commercial development projects, several recreational facilities, and several roadway projects. North of the project site, along Pico Canyon Boulevard, lies an actively developing part of Los Angeles County. Currently planned for development are 3,212 single-family residences, 2,815 multifamily units, and 41 commercial lots on 2,214 acres.

Projected Population. The proposed Towsley Canyon Landfill site lies at the northern end of the Los Angeles County Santa Clarita Valley Planning Area, which includes the City of Santa Clarita. The County Regional Planning Department projects that, under current planning and zoning designations, the maximum population in this area is 300,000.

The Southern California Gas Company Aliso Field operations abut a portion of the southeast side of Towsley Canyon. No population growth is projected for this area. Browns Canyon abuts a portion of the southern side of Towsley Canyon. No population growth is projected for this area or for the land to the west and east of the project site that is designated SEA and zoned A-2-2.

4.1.5 Mission-Rustic-Sullivan Canyons

The potential Mission-Rustic-Sullivan Canyons Landfill Complex is located in the coastal basin portion of the Santa Monica Mountains chain within the City of Los Angeles. In

**Table 4.1-4 Reasonably Foreseeable Projects List for the
Towsley Canyon Landfill Site Area**

Designation on Figure 4.1-4	Size, acres	Description
1	757	SP87222 (TR 4543 and 35955). Valencia Company. 1,190 single-family (SF) homes, 675 multifamily (MF) units. Under construction.
2	169	TR33613. Dale Poe development. 586 SF homes.
3	258.3	TR43896. Dale Poe Development. 341 SF homes.
4	20	TR44336. Dale Poe Development. 108 MF units.
5	6.9	TR44337. Dale Poe Development. 45 MF units on 6.9 acres.
6	54.6	PM17646. ABCO Associated Investments. 655 MF units and 4 commercial lots. Under construction.
7	20	TR44338. Dale Poe Development. 300 MF units. Under construction.
8	8.88	TR44339. William Poe/Dale Poe Development. 296 MF units. Under construction.
9	14.8	TR44340. Dale Poe Development. 75 SF residences. Under construction.
10	14.8	TR44353. Dale Poe Development. 82 SF residences. Under construction.
11	520.6	TR33698. Dale Poe Development. 552 SF residences and 330 MF units. Under construction.
12	66.17	TR45308/SP89157. Larwin Company. 19 SF residences.
13	33.5	PM18654. Newhall Land & Farming. 12 commercial lots and 1 open space lot.
14	14.4	PM19050. Newhall Land & Farming. 5 commercial lots.
15	8.6	PM8676. Newhall Land & Farming. 11 commercial lots. Under construction.
16	20.1	TR44806. Dale Poe Development Corp. 1 commercial lot.
17	6.10	TR46777. Larwin Company. 3 SF residences and 1 open space lot.
18	1.5	TR45390. Larwin Construction. 3 SF residences.
19		TR45638/PM17646. ABCO Assoc. Investors. 7 SF residences, 5 commercial lots, and 510 MF units. Under construction.
20	5.8	TR45391. Larwin Construction. 6 SF residences, 4 commercial lots, and 2 open space lots.

Table 4.1-4 Reasonably Foreseeable Projects List for the
Towsley Canyon Landfill Site Area (continued)

Designation on Figure 4.1-4	Size, acres	Description
21	213	TR31399. Camden Development Company. 240 SF residences, 3 commercial lots, and 13 open space lots.
22	NA	TR46473. 100 SF residences.
23	NA	TM46619. 20 units off LaSalle Canyon.
24	NA	Rim of the Valley Trail. Towsley ridge on boundary between Towsley Canyon and Southern California Gas property.
25	6,000	Proposed Santa Clarita Woodlands Park/Canyon Park.
26	542	SP86312. Sunshine Canyon Landfill expansion of 215 million tons.
27	NA	Extension of freeway/frontage road greenbelt onto Donkey Farm property. To be constructed by Valencia Company and dedicated to City of Santa Clarita.
28	NA	McBean Parkway Extension. Currently being extended to Pico Canyon by developers. Planned to connect with Calgrove Boulevard.
29	NA	Pico Canyon Road improvements. A benefit district is operating (developer fees). The Lyons/Pico Canyon interchange is scheduled for widening beginning in September 1989. Pico Canyon Road itself is scheduled to be widened by developers to the west. A portion of this work is currently under way. A spur off Pico Canyon has been graded to the intersection with the Old Road just south of Pico Canyon.

^aTotal site acreage.

Note: NA = not available.

Source: Planning staffs from Los Angeles County and the City of Santa Clarita.

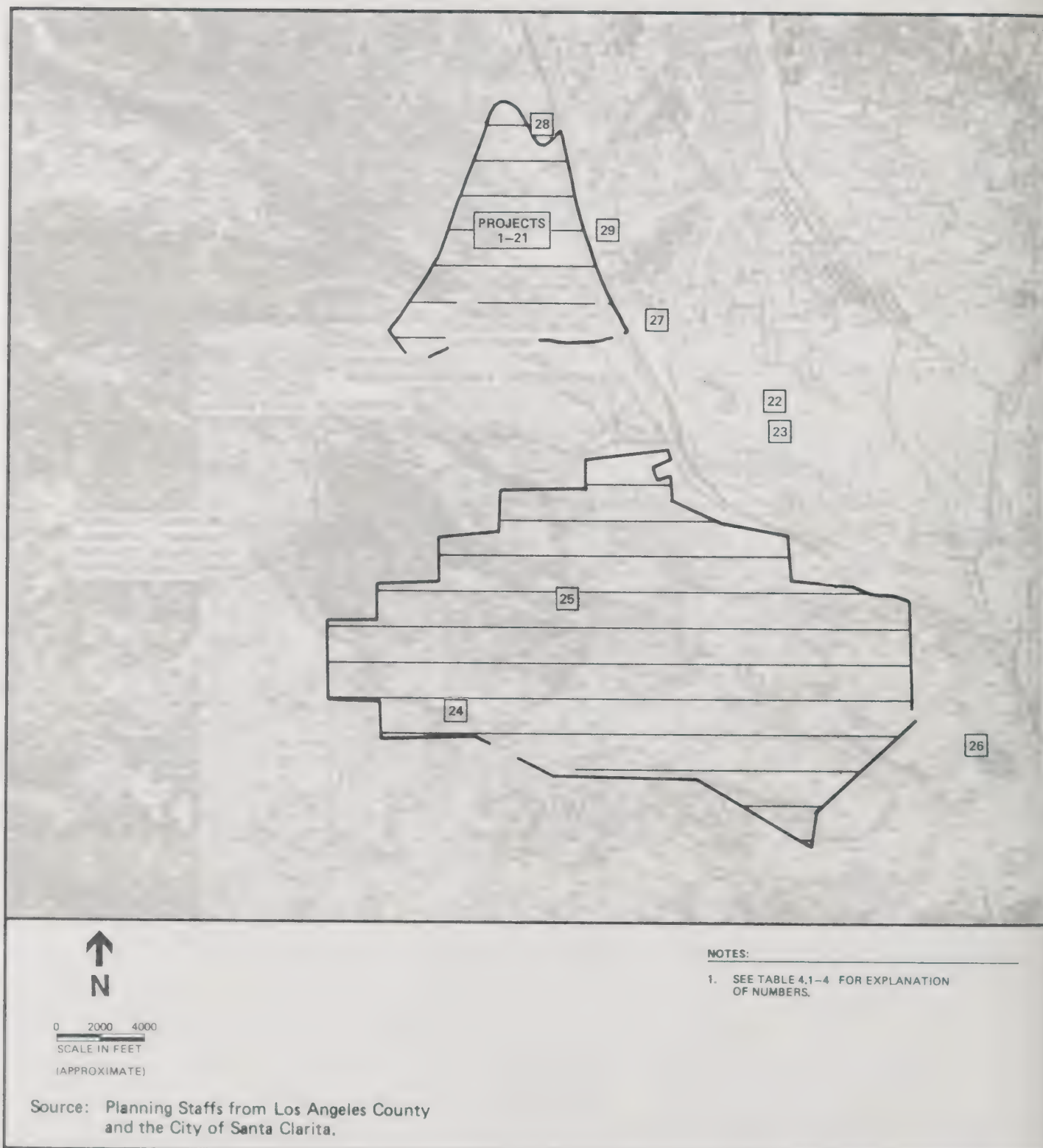


Figure 4.1-4 Reasonably Foreseeable Projects in the Towsley Canyon Landfill Site Area

1980, an EIR was completed for development of the Mission Canyon site as a landfill.⁴ The Rustic-Sullivan Canyons, however, have not been subject to prior environmental review.

Setting

Mission Canyon is located immediately west of the San Diego Freeway and Sepulveda Boulevard in Sepulveda Pass near the crest of the Santa Monica Mountains (Figure 4.1-5). The natural contours of the canyon have been disturbed by construction along the ridges, fire roads and some land-filling. Within the canyon, the north-facing slopes are currently untouched. The south-facing slopes have been extensively modified and the western ridge is the site of proposed housing development.

Rustic and Sullivan Canyons lie west of the Mission Canyon and south of the unpaved portion of Mulholland Drive. They are separated from Mission Canyon by Mandeville Canyon. Land use information shown on Figure 4.1-5 is discussed later in this section.

Land Use Designations and Zoning. The Mission-Rustic-Sullivan Landfill complex is subject to planning policies and programs of both the City of Los Angeles and County of Los Angeles. The City General Plan consists of District Plans that cover specific areas within the City. This potential landfill site complex is in an area covered by the Brentwood-Pacific Palisades District Plan.

The Los Angeles County General Plan. The Los Angeles County General Plan indicates that a portion of the land within Sullivan and Rustic Canyons is within SEA 11, the Temesca/Rustic-Sullivan Canyons SEA. This designation does appear in the Brentwood-Pacific Palisades District Plan. SEA 11 describes these canyons as "representative samples of the dry chaparral and coastal sage scrub plant communities found in the interior canyons of the Santa Monica Mountains . . . they are contiguous, self-contained watersheds that are large enough in size to support representative samples of native flora and fauna. They are relatively undisturbed, and are the last major pieces of habitat in the Santa Monica Mountains before reaching the dense urban development to the east."

The County General Plan designates these canyons as potential solid waste management facilities in the current version (1988).

Los Angeles City Zoning Ordinance. All of Mission Canyon and Rustic-Sullivan Canyon is zoned RE-40-1H#, described as a zoning "equivalent" to the general plan designation of open



Figure 4.1-5 Land Use in the Mission-Rustic-Sullivan Canyons Landfill Site Area

space. A portion of the proposed access corridor is zoned RE-15 and RE-11, allowing minimum lot sizes of 9,000 to 11,000 square feet.

The land surrounding the Mission Canyon site is zoned RE-40-1H#, RE-15-1H, and (Q)A1-1# and RE-40-1-H, open space and residential estate zoning designations, respectively.

Brentwood-Pacific Palisades District Plan. All of the land in the Mission-Rustic-Sullivan Landfill Complex site is designated as either publicly owned open space or as quasi-public land with desirable open space in this plan. The Plan does indicate that "essential public projects necessary to the safety, health and well being of the region and District as a whole" may be considered for open space land. However, the plan specifically states that the "use of Rustic and Sullivan Canyons as landfill sites should be avoided." The Plan recognizes the possibility that Mission Canyon may be considered for further landfilling but urges that such use of this area be permitted only until "such time as a suitable alternative is established."

The Mulholland Drive Scenic Parkway Specific Plan. This plan imposes development restrictions on property within approximately 0.5 mile of the Mulholland Drive right-of-way in order to protect the viewshed. Specific policies within the Plan are aimed at assuring that land use along the corridor preserves or enhances the views from the Parkway; preserves the existing character of developed and undeveloped areas along the Scenic Parkway; and preserves and enhances the existing ecological balance.¹⁴

National Park Service. The National Park Service's (NPS) General Management Plan for the Santa Monica Mountains National Recreation Area (April 1982) classifies land within the mountain's area to identify scenic and natural resources and to help guide its own acquisition and management policies as well as the development activities of other public entities and private concerns. Rustic and Sullivan Canyons are within the classification "Special Natural or Cultural Area." The NPS recommends that these lands be protected "from development and visitor uses that could damage irreplaceable resources," including "significant landforms". Land to the east of Sullivan Canyon, along the proposed access route is classified "Scenic and Resource-Oriented Recreation Area." These lands are described as "important to the view from scenic roads and trails." The NPS recommends that only developments that have a minimal effect on scenic features be allowed in these areas.

Santa Monica Mountains Conservancy. The Conservancy has identified the acquisition for park purposes of Mission-Rustic-

Sullivan Canyons as a "high priority project" for funding under the 1988 Parkland Bond Funds. Such use would be inconsistent with the proposed use of these canyons as landfill sites.

Existing Land Use. Land uses that exist within and around the proposed Mission-Rustic-Sullivan Canyon Landfill Complex consist primarily of open space, recreation and parks, and residential uses (Figure 4.1-5). These uses are discussed below.

Project Site. Both the Mission and Rustic-Sullivan Canyons are currently in open space. Areas immediately bordering Mission Canyon were used for landfilling in the past, but these have since been closed. Several dirt roads pass through the Mission Canyon site which form part of the internal circulation system for the landfill complex.

Surrounding Land Uses. Table 4.1-5 summarizes the existing land uses which surround the potential Mission-Rustic-Sullivan Landfill complex, while Figure 4.1-5 shows their general locations. The Mission Canyon Landfill site is surrounded by residential areas, a large private golf course, and several schools. The floor of Mandeville Canyon, which separates Mission and Rustic-Sullivan Canyons, is developed primarily with single-family homes along the entire length of the canyon floor. Rustic-Sullivan Canyons are bordered by park land and open space. The Boy Scouts of America operate Camp Josepho, which is located west of the southern tip of Sullivan Canyon. Pipelines and utilities which exist at the landfill complex are discussed in Section 4.11, Public Services and Utilities.

Related Projects/Projected Populations. To assess the potential for land use impacts to possible future land uses in the proposed project area, a cumulative projects list was developed for the Mission-Rustic-Sullivan area that provides reasonable estimates of future development. This information was developed with the cooperation of planning staffs from the City of Los Angeles, the Santa Monica Mountains Conservancy, and the National Park Service.

Reasonably Foreseeable Projects. Table 4.1-6 lists the reasonably foreseeable projects and Figure 4.1-6 shows their locations. The list includes several private development projects and several land acquisition or public development projects of the Santa Monica Mountains Conservancy, the National Park Service, and the City of Los Angeles Park Department.

**Table 4.1-5 Description of Project Site and Surrounding Land Uses
In the Mission-Rustic-Sullivan Canyon Area**

Land use	Description on Figure 4.1-5	Description
<u>Project Site</u>		
Hiking trail	1	Hub junction and backbone trails (Topanga State Park)
Closed landfill areas	2	Mission Canyon (L.A. County Sanitation Districts)
<u>Surrounding</u>		
Topanga State Park	3	Developed park with trails and recreation areas. Owned by the State of California
San Vicente Mountain Park	4	Undeveloped. Owned by the City of Los Angeles
Scenic overlook	5	Undeveloped. Owned by the Santa Monica Mountain Conservancy
Camp Josepho	6	Private camp. Owned by the Boy Scouts of America
Residential	7	-
Residential	8	-
Open land	9	-
Golf course	10	Private
Schools	11	-
Residential (Mountaingate)	12	-
Access road to Mountaingate	13	-

Source: Brown and Caldwell, 1989.

Table 4.1-6 Reasonably Foreseeable Projects List for Mission-Rustic-Sullivan Canyons Landfill Site Area

Designation on Figure 4.1-6	Size, acres	Description
<u>Private development project</u>		
1	2	TT35691. Four single-family (SF) homes north of Mulholland Drive of Sullivan Canyon.
2	164	Eastport Associates property. Up to 500 dwellings along eastern slope of Mandeville Canyon Road.
3	NA	Mountaingate residential subdivision containing 870 SF homes outh of Mission Canyon. Subdivision currently being finished.
<u>Santa Monica Mountains Conservany</u>		
4	2,300	Proposed acquisition of Mission-Rustic-Sullivan canyons area.
<u>National Park Service (NPS)</u>		
5	NA	Strip of land running along the top of and down the west slope of Sullivan Canyon is proposed for easement acquisition.
6	NA	Land between the western slope of Sullivan Canyon and the western boundary of the Santa Monica Mountains National Recreation Area (west of Mission Canyon) is proposed as a cooperative planning area.
7, 8	NA	Two areas located north of Mulholland Drive at Rustic Canyon. The westernmost property is recommended for State acquisition; the easternmost property is a proposed NPS Easement Acquisition Area. Both areas would expand to the public land that surrounds the Encino Reservoir and extends to Mulholland Drive.

Table 4.1-6 Reasonably Foreseeable Projects List for Mission-Rustic-Sullivan Canyons Landfill Site Area (continued)

Designation on Figure 4.1-6	Size, acres	Description
<u>City of Los Angeles</u> <u>Park Department</u>		
9	26	Planned park in Rivas Canyon southeast of Rustic Canyon.
10	45.66	Planned park in the south end of Rustic Canyon.
11	19.79	Planned park in the south end of Sullivan Canyon.

Note: NA = not available.

Source: Planning staffs from the City of Los Angeles, the Santa Monica Mountains Conservancy, and the National Park Service.

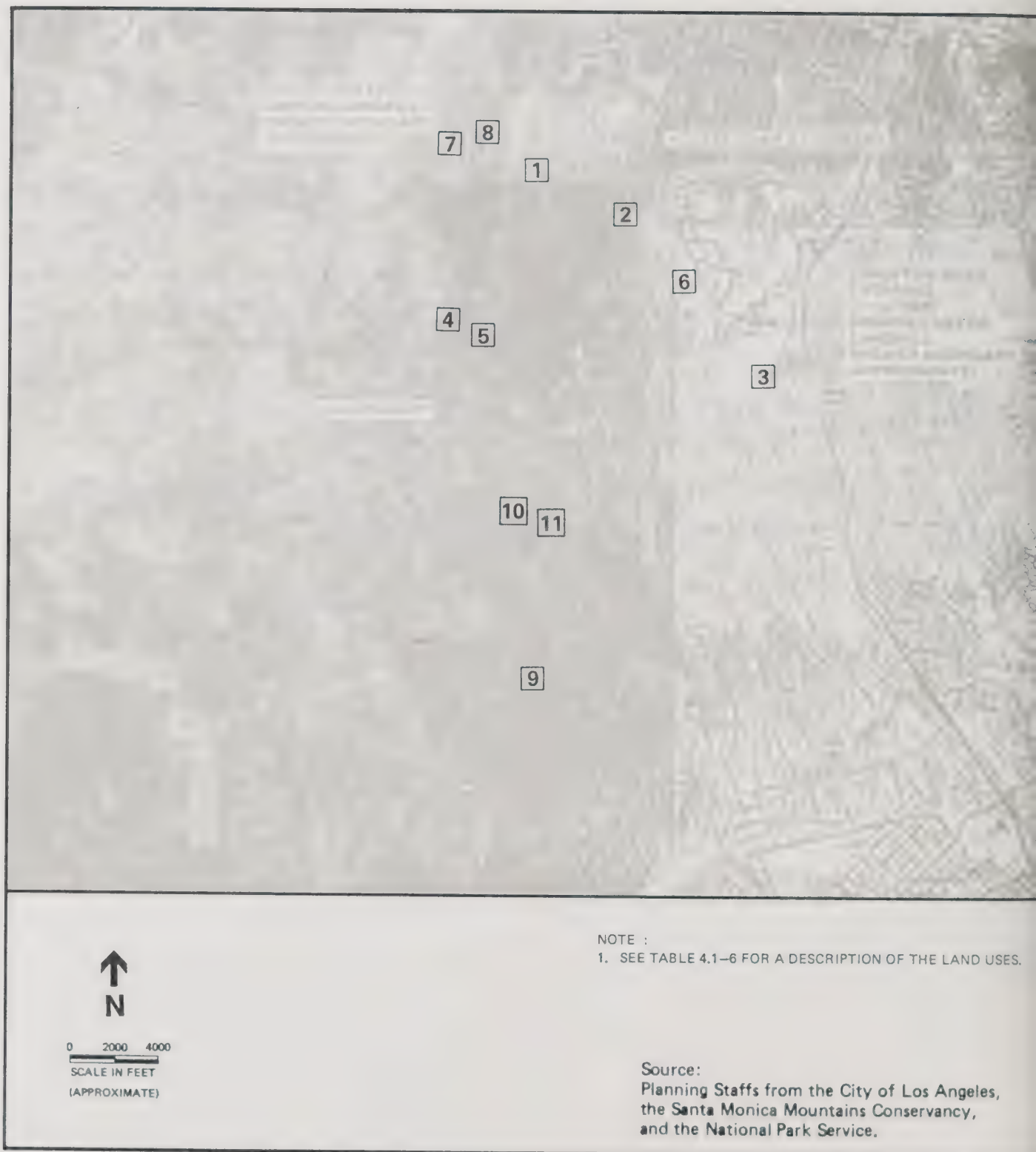


Figure 4.1-6 Reasonably Foreseeable Projects in the Mission-Rustic-Sullivan Canyons Landfill Site Area

Projected Population. The current Brentwood-Pacific Palisades District Plan projects a population of 72,700 for the planning area at build-out under current general plan and zoning designations.

4.2 GEOLOGY, SOILS, AND WATER RESOURCES

A primary consideration in siting a new solid waste facility is the suitability of the site's physical characteristics. The geologic, soils, and water resource issues associated with waste diversion activities and potential new landfill sites are discussed in this section.

4.2.1 Waste Diversion

Geologic, soil, and water resource issues impacted by the diversion of waste through reuse, recycling, and composting may include those arising from the storage, collection, and processing of recyclable materials, those arising from the diversion of these materials from landfill disposal, and those arising from the use of these materials in manufacturing facilities located within the County.

Impacts and Mitigation Measures

Impacts and mitigation measures associated with various geologic, soil, and water resource issues are discussed below. Because specific facility sitings have not been proposed in the Program EIR, the discussion is necessarily general in content.

Collection and Intermediate Handling. In almost all cases of recyclable material being collected and processed for end use, the material is contained and commonly processed under roof in urban settings. Geologic and soil impacts would, therefore, be relatively insignificant. Stormwater runoff would have to be kept from coming in contact with mixed waste and diverted into appropriately sized drainage facilities. Process use water would likely be directed into the sewage system and would not come into contact with surface or underground water resources.

Some scrap facilities could include large, uncovered, and unpaved areas and/or be located near surface waterways. In such cases, the possibility of soil and/or water contamination through runoff of rainwater exists. These conditions can be mitigated by appropriate engineering design and facility siting requirements.

Major, centralized, composting facilities could allow contaminated liquids into nearby surface or underground water sources. However, adequate control can be readily engineered into the design of such facilities.

Ultimate Processing. Most material recovery end uses in commodity manufacturing will have little or no impact on the geology of the area or the quality of soils and water.

The greatest potential impacts of these systems are related to the land application of processed organics from such processes as aerobic and anaerobic digestion (composting) or some form of shredding or chipping for uncomposted mulches. Potential negative impacts of such land application include heavy metal and other chemical contamination of soils and leaching of such contaminants into surface or groundwater resources. These potential problems can be mitigated by a program of testing of end product before land application and by appropriate monitoring and control of application concentrations in conformance with state and federal regulations.

These same land applications of processed organics, given appropriate monitoring, can have substantial positive impact on upgrading soil quality by enhancing aeration, moisture retention capacity, and increasing the topsoil layer.

Unavoidable Impacts

None. Incorporation of appropriate engineering design and facility siting requirements and adherence to state and federal regulatory requirements would mitigate any potentially significant adverse impacts.

4.2.2 Issues Common to All Landfills

A comprehensive set of state regulations exist for siting, design, and construction of such a facility. Technical considerations and issues common to all potential landfills are discussed below.

Regulatory Overview--Subchapter 15

Subchapter 15, Title 23 of the California Code of Regulations (CCR), identifies specific geologic and geotechnical criteria which must be met for existing and new Class III facilities. Appendix E indicates regulatory criteria for Class III landfill sites. These standards incorporate engineering principles in order to reduce the risk associated with waste disposal facilities to an insignificant level. The relevant sections of Subchapter 15 are:

<u>Criteria</u>	<u>Section</u>
Siting	2530 and 2533
Construction and landfill closure	2540 through 2549 and 2580 through 2584
Alternatives to construction or prescriptive standards	2510
Precipitation and drainage controls	2546

These requirements are summarized below.

Geologic Siting Criteria. Geologic siting criteria are discussed below.

Ground and Surface Water. Class III landfills shall be sited where soil characteristics, distance from waste to groundwater, and other factors will ensure no impairment of beneficial uses of surface water or of groundwater beneath or adjacent to the landfill. Factors that shall be evaluated include size of the waste management unit, permeability and transmissivity of underlying soils, depth to groundwater and variations in depth to groundwater, background quality of groundwater, current and anticipated use of the groundwater, and annual precipitation.

Where consideration of the factors above indicates that site characteristics alone do not ensure protection of the quality of groundwater or surface water, Class III landfills shall be required to have at least a 1-foot clay liner or equivalent liner with permeability of 1×10^{-6} cm/sec or less.

Depth to Groundwater. Class III landfills shall be sited, designed, constructed, and operated to ensure that wastes will be a minimum of 5 feet above the highest anticipated elevation of underlying groundwater.

Flooding. Class III landfills shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods.

Ground Rupture. New Class III landfills shall not be located on a known Holocene (active within the last 10,000 years) fault.

Rapid Geologic Change. Class III landfills may be located within areas of potential rapid geologic change if containment structures are designed, constructed, and maintained to preclude failure.

Seismic Design. Class III waste management units shall be designed to withstand the maximum probable earthquake (MPE) without damage to the foundation or to the structures which control leachate interception and collection, surface drainage cover and sideslope, erosion, and/or landfill gas collection.

Geotechnical and Geological Liner and Cover Construction Criteria. The liner system for Class III landfills must develop a permeability of 1×10^{-6} cm/sec or less through in situ geologic materials or the installation of natural or artificial materials. Clay liners shall be a minimum of 1 foot thick and shall be installed at a relative compaction of at least 90 percent. Synthetic liners shall have a minimum thickness of 40 mils (one "mil" equals one-thousandth of one inch).

The use of interim fill cover is required at landfills. Interim fill cover is defined as the daily and intermediate soil cover periodically placed over the refuse. The fill cover shall be designed and constructed to minimize percolation of precipitation into the refuse.

The final soil cover system requirements for closure of a landfill consist of a 2-foot layer of compacted cover material, which may consist of soil or other similar materials that achieve the approved engineering project design. This layer must be overlain by not less than 1 foot of soil containing neither wastes nor leachate. Suitable soil is compacted to obtain a permeability of 1×10^{-6} cm/sec or less or is compressed until the measured permeability equals the permeability of any bottom liner system or equivalent underlying natural geologic material. The rooting depth of any vegetation planted on the cover must not extend to the underlying compacted layer described above.

Closed landfill slopes shall be graded and maintained to prevent ponding of surface water. Areas with slopes greater than 10 percent must be protected against erosion by wind or water. In addition, the final cover must be maintained to correct the effects of settlement or other adverse factors.

Precipitation and Drainage Control. Precipitation and drainage control criteria include:

1. Ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping shall be prevented.
2. Precipitation not diverted by covers or drainage control systems shall be collected and managed through the leachate collection and removal system.
3. Permanent diversion and drainage facilities shall be designed and constructed to accommodate the anticipated volume of precipitation and peak flows from surface runoff under 100-year, 24-hour precipitation conditions.
4. Collection and holding facilities associated with precipitation and the drainage control system shall be emptied immediately following each storm or otherwise managed to maintain the design capacity of the system.
5. Cover materials shall be graded to divert precipitation from the landfill, to prevent ponding of surface water over wastes, and to resist erosion.

Landfill Settlement

Landfill settlement is the reduction in elevation of the fill surface commonly occurring as uneven, differential settlement, which may create sags and depressions in the final cover system. The causes of landfill settlement include:

1. Compression of the refuse fill under its own weight as well as during compaction and covering.
2. Chemical and biological decomposition of organic materials with decomposition leading to formation of voids within the refuse fill.
3. Movement of soils into voids within the refuse.
4. Vibrations from earth-moving and landfill equipment and ground shaking from earthquakes.

In addition to the failure of natural slopes, the movement of refuse slopes could have a serious impact on the landfill. Studies on the stability of landfill slopes have been conducted on all the Sanitation Districts' operating landfills. The results of these investigations found that steep refuse slopes will remain stable even during an earthquake with permanent

deformations no more than what is expected from normal settlement forces. Prior to landfilling activities, a site-specific refuse stability study would be conducted.

Impacts. Excessive settlement could cause cracks to develop in the final cover system, which could allow surface water to infiltrate into the landfill. This would result in a significant increase in the generation of leachate and the refuse settlement rate. Landfill gas could also escape through the settlement cracks, creating a potential fire hazard (due to methane gas) and odor problems. Settlement may also damage or impair the function of surface structures such as roads, equipment sheds, and drainage facilities.

Settlement of the landfill could have a significant impact upon the operation of the landfill gas collection and recovery systems, if not taken into account in the design of these facilities. As settlement occurs beneath the landfill gas piping system, piping that crosses the settlement area could sag and ultimately break. This would be a significant adverse impact, which can be mitigated through appropriate design of final fill cover, gas collection systems, and an ongoing monitoring and maintenance program.

Mitigation Measures. To reduce the potential for significant impacts resulting from settlement of the final landfill cover, Section 2581 of Subchapter 15 requires a 4-foot-thick soil cover. The soil cover consists of a 2-foot layer of compacted foundation material, at least 1 foot of low permeability (1×10^{-6} cm/sec) soil material, and 1 foot of vegetative soil cover.

The final surface grades of the potential landfills would be designed to accommodate drainage after settlement. To verify the integrity of the final cover, a program of routine observation and maintenance would be instituted by the Sanitation Districts for a period of at least 30 years after closure. Additionally, permanent survey control monuments would be established and maintained to provide reference points for future settlement measurements. Gas recovery systems would be designed to accommodate anticipated amounts of settlement, and monitoring of settlement with the survey monuments would provide early warning signs if settlement should be more than anticipated. Early identification and appropriate remediation measures could be implemented as warranted. Implementation of these mitigation measures would reduce potential settlement impacts to insignificance.

Groundwater

Inadequately designed or operated landfills have the potential to cause groundwater contamination. Discussion is included below which applies to all potential landfills. Information specific to each landfill site, including site-specific hydrogeology and groundwater, is presented in subsequent sections.

Impacts. The major causes of potential groundwater contamination are inundation (submergence of refuse in groundwater), excessive rates of liquid disposal, and infiltration of surface water runoff. Water percolating through solid waste may leach high levels of dissolved solids and soluble organics from the waste. Leachates in the above concentrations have the ability to seriously affect groundwater quality.

A secondary threat to groundwater can result from contact with landfill gas. Landfill gas contains both carbon dioxide and volatile organic compounds (VOCs). Excess amounts of carbon dioxide may cause the groundwater to become slightly acidic. This acidity can cause an increase in the weathering and degradation of the solid sediments, making the water "hard." The solubilization of the VOCs into the water can cause these compounds to be detected in low levels in groundwater samples and adversely impact groundwater quality.

Mitigation Measures. Design and operational measures will be taken to prevent leachate production due to inundation, excess liquid disposal, or infiltration. Geologic investigations for all of the potential sites indicate that the depth to maximum groundwater elevation far exceeds the minimum requirements of 5 feet specified in Subchapter 15. Inundation would be prevented by the installation of an underdrain system located below the composite landfill liner. Any potential liquids that may infiltrate and form leachate will be contained by a liner system as well as a subsurface barrier system. The subsurface barrier system would prevent the lateral migration of potential fluids along the higher permeability alluvium, while the composite liner system will collect and remove any leachate before it comes in contact with weathered or fractured bedrock. In addition to preventing leachate migration, the synthetic portion of the liner system will also form a barrier to landfill gas migration. The liner, along with a landfill gas collection system, will effectively prevent the contact of landfill gas with groundwater.

A complete discussion of the groundwater protection system is presented below. A discussion of the landfill gas control system is presented in Section 4.5.

Groundwater Protection System. As discussed in the project description (Chapter 3, Section 3.4.5), the groundwater protection system would consist of a composite liner system, subsurface barrier system, including monitoring and extraction wells and unsaturated zone monitoring to prevent potential groundwater contamination and to control potential landfill gas migration.

The composite liner system would be installed for the purpose of preventing the migration of potential leachate and landfill gas into the alluvial or bedrock materials beneath the fill and would consist of (from bottom to top) an underdrain, a clay liner, a synthetic liner, a leachate collection and removal system, a geotextile filter, and a protective soil layer. Figure 3-17, Chapter 3, shows a cross section view of the proposed liner system.

Subchapter 15 allows for the construction of a Class III landfill over earthen materials with a permeability, less than or equal to 1×10^{-6} cm/sec. If the underlying geologic materials exceed this permeability a clay liner is required. As discussed in Sections 4.2.3, 4.2.4, and 4.2.5, portions of the proposed fill areas in Blind, Towsley, and Mission-Rustic-Sullivan Canyons have permeabilities greater than 1×10^{-6} cm/sec. The liner system proposed for installation would exceed Subchapter 15 requirements in that a synthetic liner would be placed in addition to a clay liner.

After excavation of the proposed fill area and prior to installation of the liner, an underdrain system would be installed along the canyon bottoms. A trench is excavated for the underdrain, which consists of placement of fine sand base, geotextile, a collection pipe, gravel, folding and overlapping of the geotextile, and placement and compaction of a soil cap. The purpose of the underdrain system is to alleviate potential hydrostatic forces on the liner system caused by a rise in groundwater.

Prior to placement of a clay liner in a proposed fill area, a test pad would be installed and evaluated. A permeability analysis of the clay test pad would be performed and, following approval by the Regional Water Quality Control Board (RWQCB), construction of the actual clay liner could begin.

After proper placement of a minimum of 1-foot-thick clay liner on the bottom of the fill area, an HDPE liner would be placed. The proposed HDPE liner would be at least

80 mils thick and would be installed and inspected according to a comprehensive quality assurance and quality control program approved by the RWQCB.

A leachate collection and removal system (LCRS) would be placed on top of the HDPE liner. The LCRS would consist of a blanket layer of sand with collection pipes spaced at appropriate intervals. Geotextile would be placed on top of the sand layer to keep any fines from entering the sand and restricting the flow of potential leachate into the piping system. A layer of soil would be placed on top of the geotextile to protect the liner system from equipment traffic and refuse.

Any potential leachate that might be created would be collected in the LCRS and piped to a concrete encased pump station for storage and appropriate removal and treatment. With the addition of header piping along the perimeter of the liner, the LCRS could also be used to extract landfill gas if necessary.

After grading and preparation, the sideslopes of the proposed fill area would have geotextile placed on them to protect the liner material from being damaged by sharp edges of rocks. An HDPE liner would be placed directly on the geotextile and would be placed in an anchor trench. Another layer of geotextile would be placed on top of the HDPE liner for additional protection and to keep the liner in place as the refuse on top of it settles. Before refuse is placed against the side slopes, 2 feet of protective soil would be placed.

Groundwater protection systems as described above are currently in place at the Sanitation Districts' Puente Hills and Calabazas Landfills and are in design for installation at the Spadra Landfill.

In addition to the composite liner system, a subsurface barrier system would be installed. The purpose of the subsurface barrier system is to stop the lateral migration of any fluids from leaving the landfill area and entering downgradient hydrogeologic systems.

The subsurface barrier would consist of both passive and active components. The "passive" component would consist of the actual cement/bentonite subsurface barrier. The "active" component would consist of extraction wells and piezometers upgradient of the barrier and monitoring wells and piezometers downgradient of the barrier.

The subsurface barriers would be constructed by the slurry trench method and would be located downgradient of the proposed fill areas. This method consists of excavating a trench into underlying bedrock and filling it with a water, bentonite clay, fly ash, and cement slurry mixture. Field tests on other subsurface barriers constructed at Sanitation Districts sites in this manner indicate that permeabilities in the 10^{-7} to 10^{-8} cm/sec range can be obtained using carefully controlled mixing and construction techniques.

A trench is constructed by the excavation of canyon alluvial soils and underlying bedrock material with heavy excavation equipment while the slurry is continually pumped into the trench. The trench would be keyed a minimum of 5 feet into the bedrock as determined by site conditions. As the excavation proceeds to the required depth, the dense slurry replaces the excavated soils and, thus, supports the trench walls. As the bentonite/cement slurry mixture hardens, an extremely low permeability barrier is formed.

An important part of the integrity of the subsurface barrier is the slurry mix design and mechanical mixing process. The slurry mix design would be based on previous mixes and consist of pulverized, high-swelling, natural sodium bentonite; low alkali, sulphate resistant, Portland cement Type II; Type F fly ash; lignosulfate based retarder; and potable water. The slurry would be mixed on site and in ratios so as to provide the necessary permeabilities. A diagram of the mixing process is shown on Figure 3-18.

In order for the subsurface barrier to be effective, canyon waters that accumulate behind it must be removed. To remove this water, a series of extraction wells would be installed upgradient of the barrier. Locations and design of the extraction wells would be based on the site specific hydrogeology.

An extraction and pumping system would be constructed to remove canyon waters if they should build up in the alluvium behind the barrier. The system would consist of automatic submersible pumps that would be activated once the water reached a certain level. The water would be pumped to a storage area before reuse or discharge into the sewer system.

Piezometers would be located upgradient and downgradient of the subsurface barrier to monitor the water levels and determine the overall barrier efficiency. Water would not be allowed to accumulate behind the barrier. To determine

the effectiveness of the subsurface barrier, alluvial and bedrock monitoring wells would be located downgradient. The monitoring wells would quickly detect the presence of contaminated canyon waters, should they migrate through or below the barrier. Monitoring well locations and design would be based on the site-specific hydrogeology.

As described in Chapter 3, saturated and unsaturated zone monitoring systems will be installed at each potential landfill site to determine the background concentrations of water quality parameters and to act as detection monitoring points once refuse operations begin. These monitoring systems are mandated by Article 5 of Subchapter 15 which describes the water quality monitoring requirements for classified waste management units.

The saturated monitoring system will consist of bedrock and alluvial monitoring wells installed both upgradient and downgradient of the proposed landfill. A minimum of four quarterly groundwater samples will be obtained from the wells. The results of the existing water chemistry determined from the sampling will be used by the RWQCB to establish water quality protection standards for the site. The unsaturated zone monitoring system will be similar to that of the saturated system except that soil-pore liquid will be analyzed as opposed to groundwater. Soil-pore liquid is fluid found within the void spaces between individual soil grains above the water table.

Following the establishment of background water quality, specific downgradient saturated and unsaturated monitoring locations will be selected as "Points of Compliance" where the water quality protection standards will be applied. The compliance point monitoring network will be designed to detect potential landfill affects at the earliest possible opportunity.

The saturated monitoring system will generally consist of wells with small diameter stainless steel casing installed in a borehole with a filter pack placed around the screened area and sealed with a grout to eliminate infiltration of surface water. The actual design of the monitoring wells will be determined based on site-specific conditions at each potential landfill.

The unsaturated zone monitoring system will generally consist of suction lysimeters placed above the water table. The lysimeters consist of a porous ceramic tip connected to a collection tube and surrounded by a silica powder. The lysimeter is connected to the surface by tubes which can be used to apply a vacuum to the lysimeter to obtain a sample of soil-pore liquid.

Surface Water

Potential surface water impacts and mitigation measures common to all landfills are discussed in this section. Information specific to each site is presented in Section 4.2.3 (Blind Canyon), 4.2.4 (Towsley Canyon), and 4.2.5 (Mission-Rustic-Sullivan Canyons).

Impacts. Refuse placement activities could impact the quality of surface water in two primary ways. The first way consists of an increase in the amount of silt and debris carried in a stream during a storm. This increase in silt is due to the removal of vegetation and the exposure of cut slopes prior to filling. The second potential impact on surface water is through direct contact with refuse.

Mitigation Measures. To protect against erosion of the landfill, to protect the quality of surface water runoff, and to ensure that there is no increase in peak surface water runoff, both interim and permanent drainage improvements would be constructed. The precipitation and drainage controls would be designed and constructed to be in compliance with Subchapter 15 requirements. The RWQCB, Los Angeles region, would be responsible for reviewing and approving surface water drainage control plans.

Types of drainage improvements to be employed at the proposed landfills include collection structures, desilting basins, and drain pipes. Interim drainage measures would be employed during the operating life of the landfill. The landfill surface would be designed to divert water away from areas of active filling, thus avoiding contact between refuse and stormwater runoff. Corrugated steel pipe would be used to convey stormwater down landfill faces. Additional pipe would be used to extend the drains as each lift is completed. Debris basins would be constructed in the canyon to keep silt and debris from flowing off site. Debris basins would also serve as retention structures that regulate the flow of runoff. Permanent drainage structures would be constructed to control runoff from the completed landfill project. These structures would mitigate the potential impact of increased runoff resulting from landfill development.

Design of the drainage control features for the proposed canyon landfill sites would be based on applicable standards. Preliminary estimates of the total volume of runoff generated from within the drainage areas of Blind, Towsley, and Rustic-Sullivan Canyons were developed using the Los Angeles County Department of Public Works Hydrology Manual⁷² and computer

models applicable specifically to Los Angeles County^{73,74} and are presented in the site-specific discussions of surface water drainage systems.

Site Investigations

The following discussion of the geologic conditions at the potential landfill sites is based upon site-specific geologic and geotechnical feasibility investigations conducted by geologic consultants. The purpose of the investigations was to determine the feasibility of operating Blind, Towsley, and Mission-Rustic-Sullivan Canyons as potential Class III landfills. The studies for the potential landfill sites included an examination of regional and local geologic conditions as well as a seismicity and water resources evaluation, geologic mapping, geophysical profiling, core drilling, analysis of the in situ permeability of the bedrock formations, and an assessment of the slope stability. The geologic evaluation of the Mission Canyon portion of the potential Mission-Rustic-Sullivan Canyons complex was based on investigations conducted for the Mission Canyon EIR (L.A. County Sanitation Districts, 1980).⁴

4.2.3 Blind Canyon

The following discussion on the geology and soils of the potential Blind Canyon Landfill is based on a study conducted by International Technology (IT) Corporation (1990).¹¹⁹

Regional Geology

Blind Canyon is located in the Santa Susana Mountains, which are within the Transverse Ranges Province of California. The Transverse Ranges are characterized as an east-west trending band of mountains that are transverse to the typical north-south trend of other mountain ranges in the state. The Santa Susana Mountains are situated within the western segment of the Transverse Ranges Province. This segment of the Transverse Ranges is composed of two primary divisions of rock. The lower division consists of clastic marine sedimentary rocks derived from eroded granitic and metamorphic highlands along the continental margin to the east. The upper division is comprised of a variety of marine, continental, and volcanic formations from both continental and oceanic basement terrains, predominantly within or near the Transverse Ranges Province.

Project Site Setting

The project site setting is discussed in this section. Topics discussed include relevant geologic characteristics, groundwater, and surface water.

Bedrock Formations. Figure 4.2-1 is the geologic map of the potential Blind Canyon Landfill site. Blind Canyon is underlain by a diverse assemblage of sedimentary rock formations that range in age from Cretaceous to Holocene (135 million years ago to present). The dominant rock types found within the site include friable (easily crumbled) to well-cemented sandstone, conglomerate, and shale, with lesser amounts of coquina, limestone, and diatomaceous shale. Each of the stratigraphic units found at the site is described below from oldest to youngest.

Chatsworth Formation. The Chatsworth Formation is the oldest unit underlying Blind Canyon. It is composed of massive, well-cemented arkosic marine sandstones separated by thin shale interbeds. This formation forms the prominent southern flank of Blind Canyon. The Chatsworth Formation consists of thick-bedded to massive, fine-to-coarse grained, arkosic sandstone. Individual beds of the sandstone are 2 to 40 feet thick and are often separated by 1 to 3 foot thick interbeds of hard, gray, micaceous shale. The hard, well-cemented sandstone beds of the Chatsworth Formation have been cut by a system of vertical joints. These joints follow two dominant orientations that are vertical and nearly perpendicular to each other.

Simi Conglomerate. The Simi Conglomerate is composed of a massive, reddish-brown conglomerate consisting of polished well-rounded, quartzitic and granitic pebbles and cobbles set in a matrix of medium-to-coarse grained arkosic sandstone. Sandstone lenses up to 20 feet thick are interbedded in the conglomerate and provide the only indication of stratification. The upper portion of the Simi Conglomerate grades into a sequence of alternating sandstone beds and thinner conglomerate interbeds.

Santa Susana Formation. The Santa Susana Formation consists of silty shale with thin beds of fine-to-medium grained sandstone. The base of the formation consists of interbedded lenses of sandstone and shale. Overall, the formation is highly fractured and weathered and is characterized by smooth, low slopes and ridges that are easily eroded.

BLIND CANYON LANDFILL
TO LEFT BOUNDARY
APPROXIMATE



0 500 1000
SCALE IN FEET
(APPROXIMATE)

LEGEND:

GEOLOGIC UNITS

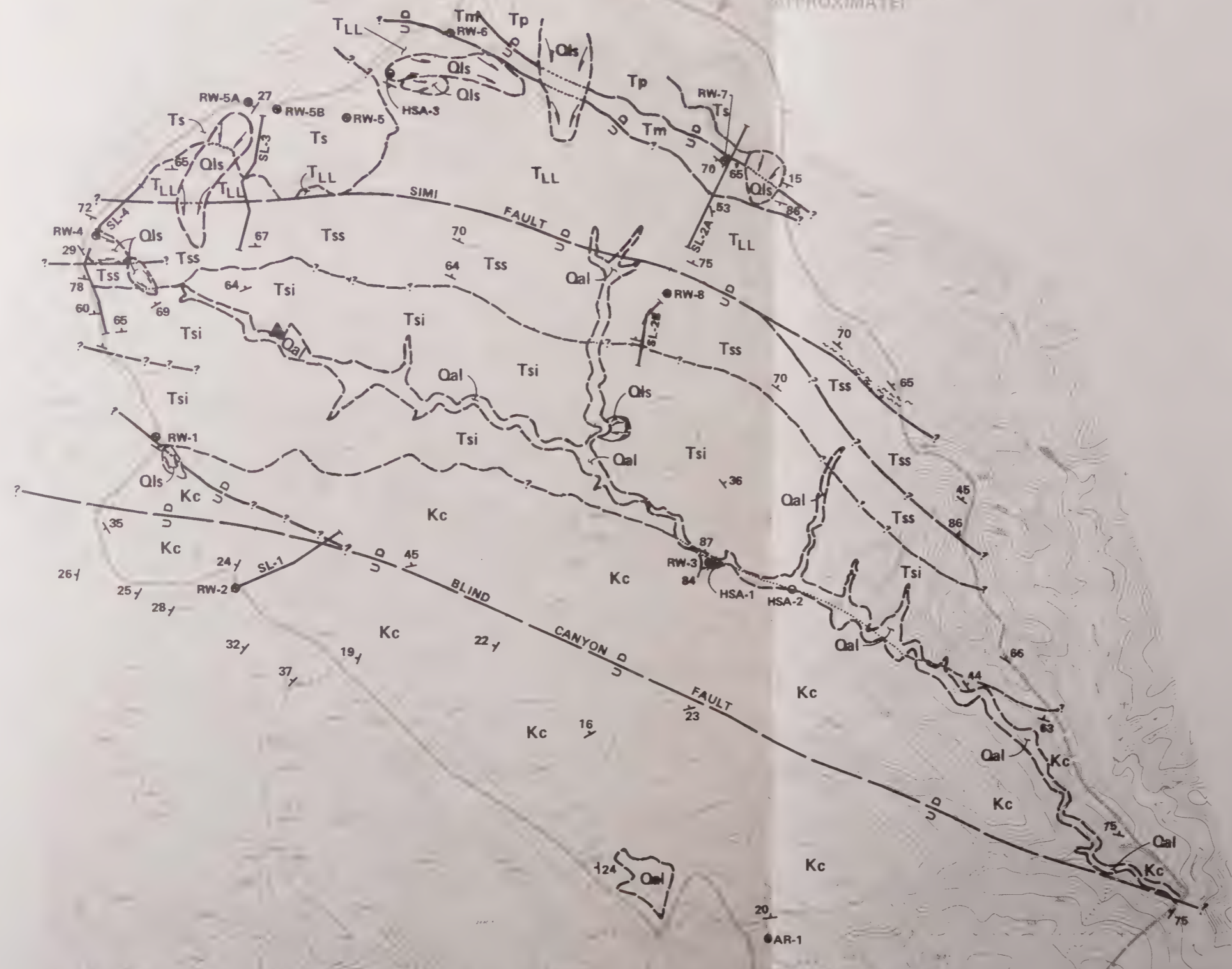
Qal	ALLUVIUM
Qls	LANDSLIDE DEPOSIT
Ts	SAUGUS FORMATION
Tp	PICO FORMATION
Tm	MONTEREY FORMATION
TLL	LAS LLAJAS FORMATION
Tss	SANTA SUSANA FORMATION
Tsi	SIMI CONGLOMERATE
Kc	CHATSWORTH FORMATION

GEOLOGIC SYMBOLS

- STRIKE OF VERTICAL JOINTING
- STRIKE AND DIP OF BEDDING
- STRIKE AND DIP OF JOINTING
- STRIKE AND DIP OF FAULT PLANE
- GEOLOGIC CONTACT, DOTTED WHERE CONCEALED, QUERIED WHERE UNCERTAIN
- FAULT CONTACT, DOTTED WHERE CONCEALED, QUERIED WHERE UNCERTAIN (U - UPTHROWN BLOCK, D - DOWNTOWN BLOCK)
- ZONE OF SHEARED BEDROCK
- LANDSLIDE DEPOSIT (ARROWS INDICATE DIRECTION OF MOVEMENT)

FIELD EXPLORATION SYMBOLS

- RW-5 LOCATION OF ROTARY WASH BORINGS
- HSA-1 LOCATION OF HOLLOW-STEM AUGER BORINGS
- SL-1 LOCATION OF SEISMIC REFRACTION SURVEYS
- LOCATION OF "WEST" SURFACE WATER SAMPLE, "EAST" LOCATION IS OFF MAP.



ACCESS ROAD
ALIGNMENT (APPROXIMATE)

Figure 4.2-1 Blind Canyon Landfill Geologic Map

Source: International Technology Corporation,
September, 1989.

Las Llajas Formation. The Las Llajas Formation consists of thin to thickly bedded sandstone, containing lenses of pebble conglomerate and shale. The formation forms moderately resistant ridges and a few steep cliffs. Several highly fossiliferous horizons containing gastropods and brachiopods were observed.

Monterey Formation. The Monterey Formation consists of diatomaceous shale and is highly organic.

Pico Formation. The Pico Formation consists of silty sandstone that is fine-to-medium grained and massive to thickly bedded.

Saugus Formation. The base of the Saugus Formation is characterized by a prominent fossiliferous sandstone and limestone horizon that crops out as a resistant cliff along the northern rim of Blind Canyon. The formation grades upward into alternating sequences of conglomeratic coquina and shell hash, and lightly cemented, fine-to-coarse grained, silty sandstone. The upper half of the formation consists of nonfossiliferous conglomerates that are poorly indurated and contain varicolored granitic and quartzitic pebbles and cobbles.

A determination of the rippability of the bedrock formations at Blind Canyon was conducted using seismic geophysical methods. The rippability of a material is defined as the ability of the soil or rock to be excavated by earth-moving equipment. Based on the results of the geophysical analysis, most of the materials at Blind Canyon can be excavated as necessary using conventional equipment. Only the Chatsworth Formation contains zones that are sufficiently hard to cause difficulty in excavation.

Surficial Deposits. Alluvial materials derived from the erosion of the bedrock formations were found in the main canyon as well as in several tributary drainages. The alluvium consisted primarily of stream terrace deposits as well as younger slope wash material. In general, the alluvium is composed of poorly sorted, crudely stratified, silty sand with intermixed gravels, cobbles, and boulders. The stream terraces are flat to gently sloping elevated surfaces that have been dissected by streams. The composition of the alluvium in the main east-west drainage of Blind Canyon is dominated by materials eroded from the Chatsworth and Simi Conglomerate Formations.

Folding and Faulting. The Blind Canyon site is underlain by a thick sequence of sedimentary bedrock units that have been tectonically uplifted and tilted steeply to the north. Three

steeply dipping faults were identified within the Blind Canyon area (Figure 4.2-1). These faults consist of the Blind Canyon Fault, the Simi Fault, and the Bruger Fault, which are discussed in detail below.

Blind Canyon Fault. The Blind Canyon Fault offsets the Chatsworth Formation along the southern slope of the canyon. The fault consists of a main branch that is continuous across the site and a northern splay that splits from the main branch near the western end of the canyon. Although the Blind Canyon Fault is expressed as a distinct linear trend across the site, no fault scarp or other geomorphic features could be found to suggest that the fault has ruptured within Holocene time. (Holocene time consists of the period from 11,000 years ago to the present.)

Simi Fault. The Simi Fault cuts through the northern flank of Blind Canyon, where it offsets the Santa Susana Formation against the Las Lajas Formation. The Simi Fault is characterized by a 10- to 15-foot-thick disturbed zone in which highly fractured and disrupted Santa Susana and Las Lajas materials have been incorporated. In addition, the fault zone is marked by a steep scarp, up to 20 feet high, along with a significant change in slope across the fault. The geologic mapping conducted by IT found no evidence of displacement of the Simi Fault during Holocene time. This evidence included no displacement in the Holocene stream terraces that intersect the fault plane.

Bruger Fault. The Bruger Fault is located in the extreme northern portion of the site, where it consists of two subparallel branches: a main fault branch to the south and a minor branch to the north. The two fault branches have forced a wedge of Monterey Formation shale between the Las Lajas strata to the south and the Pico Formation strata to the north. Field observations indicate that the fault is older than the Saugus Formation and, therefore, has not been active within the last 11,000 years.

Seismicity. As indicated earlier, Blind Canyon is situated in the Santa Susana Mountains, which lie within the Transverse Ranges Province. The Transverse Ranges are cut by numerous fault systems. In order to ascertain the potential effects from these faults, a seismicity evaluation using available literature was conducted on all active faults within a 60-mile radius of the site. For each of these faults, the MPE was calculated. The maximum probable earthquake (MPE) is the largest earthquake likely to occur at least once during a 100-year time period and regarded as a likely occurrence and not an assured event that will happen at a specific time. The

name, distance from the site, and estimated MPE (in Richter magnitude) of faults within a 60-mile radius of Blind Canyon are listed below:

<u>Active fault</u>	<u>Distance from site, miles</u>	<u>Maximum probable earthquake</u>
Santa Susana	1	6.5
Northridge Hills	2	6.5
San Fernando	6	6.6
San Cayetano	8.5	6.75
Sierra Madre	25	6.5
Santa Monica- Raymond Hill	19	7.0-7.5
Newport-Inglewood	24	7.0
San Andreas	27	8.25
Big Pine	37	7.5
Garlock	40	7.75
White wolf	56	7.75

During the field mapping, there were no conditions found within the study area that would indicate the presence of materials that may be susceptible to seismically induced liquefaction or densification. Although alluvial sediments at the site may contain loose granular soils, extensive deposits of liquefiable sand would not be likely to occur in an area of steep narrow canyons that contain abundant gravel deposits. Therefore, the potential risk of liquefaction is very low. Landsliding or debris flows may be induced seismically, but the type of seismic slope failures that would be expected are considered similar to those discussed in the following section on slope stability.

Slope Stability. Several types of landslides are found at Blind Canyon, including rock falls and rock topple, block-glide, slumping, and soil creep. Rock falls and rock topple take place primarily in the Chatsworth Formation along the southern portion of Blind Canyon, where the bedding forms steep antidip slopes. Rock fall and topple occur as the well-cemented, hard Chatsworth sandstone gets undercut by erosion and portions of the rock break off and fall down the slope. Block-glide landslides are found primarily in the Chatsworth Formation and occur when the formation bedding dips out of the slope of the hillside.

Slumping and soil creep occur primarily along the northern portion of Blind Canyon in the shale material of the Monterey and Santa Susana Formations. Slump failures are characterized by a steep slope at the top of the slide, a rotational failure plane, and a bulbous mound of slide debris at the bottom. Slumping generally occurs when the bedrock material is

weathered and fractured and becomes saturated by precipitation. Soil creep occurs on a much smaller scale than slumping and involves the downward movement by gravity of the top few feet of weathered bedrock or soil material.

Permeability Evaluation. Packer-type permeability testing was conducted in each of the rotary wash boreholes completed during the drilling phase of the feasibility investigation. Figure 4.2-1 indicates the locations of the boreholes. The following discussion outlines the general findings of the packer-type permeability testing.

Core samples obtained from the boreholes were carefully examined by a geologist. Based on this examination, representative intervals of the bedrock formation were selected for permeability testing. A total of approximately 33 successful packer-type permeability tests were run on the various formations at Blind Canyon. The formation, predominate rock type, and range of calculated in situ permeability are highlighted below:

<u>Formation</u>	<u>Rock type</u>	<u>Permeability range, cm/sec</u>
Chatsworth	Sandstone	1.5×10^{-4} - 9.0×10^{-6}
Saugus	Sandstone/Coquina	2.4×10^{-2} - 4.9×10^{-3}
Monterey	Shale	1.1×10^{-3} - 2.4×10^{-6}
Pico	Sandstone	1.4×10^{-3} - 4.8×10^{-4}
Santa Susana	Shale	4.5×10^{-6} - 2.5×10^{-7}
Simi ^a		

^aUnable to get seal with packers due to sloughing of borehole. Permeability expected to run between that of the Pico and Chatsworth Formations.

Groundwater. Blind Canyon is situated approximately 1.8 miles northeast of the Simi Groundwater Basin and approximately 1.9 miles north-northwest of the San Fernando Groundwater Basin. Groundwater within these two basins is considered to be of inferior quality due to high concentrations of total dissolved solids. Since the 1960s, the majority of potable water used in the area has been piped in from outside sources.

No groundwater or saturated zones were detected during the drilling phase of the feasibility investigation. Several hollow-stem auger boreholes were drilled in the shallow alluvium of the canyon bottom without encountering saturated conditions. However, during years with normal to high precipitation, it is likely that shallow groundwater flow will occur in the canyon bottom alluvium.

While it is possible that perched groundwater is flowing in the upper weathered and fractured portion of the bedrock, the hollow-stem auger borings were unable to penetrate the underlying bedrock strata. While the rotary wash drilling methods, also conducted during the study, allowed the boreholes to penetrate the bedrock, they are drilled with water, which makes it very difficult to recognize small volumes of groundwater.

Prior to the placement of any wastes at Blind Canyon, a series of background monitoring wells would be installed at the site. These wells would monitor both the alluvium and bedrock strata for a minimum of at least 1 year prior to landfilling. Quarterly samples would be obtained from the monitoring wells and analyzed to determine water quality protection standards for the site.

Six water wells were identified that are situated within a 1-mile radius of the proposed landfill. These wells are located in the small community of Fern Ann Falls, southeast of Blind Canyon. Since the wells are privately owned, no information on the use and present status (active or abandoned) of the wells is available. However, due to the poor quality and expected low pumping rates of the groundwater, it is probable that the structures are irrigation wells no longer in use. A more detailed status investigation would be conducted prior to proceeding with development of the landfill.

Surface Water. The following presents a general discussion of the surface water conditions found at Blind Canyon, surface water sampling locations, and the results of the sample analyses.

Blind Canyon is located on the north perimeter of the Los Angeles River Basin. The general direction of canyon drainage is to the southeast under natural and final development conditions. Surface drainage flows from Blind Canyon are tributary to Devil Canyon, with combined flows directed in natural channels to Brown Creek. Brown Creek is a lined channel located within the City of Los Angeles boundaries that discharges to the Los Angeles River.

Because of the intermittent nature of stream flow through Blind Canyon, surface water sampling could only be accomplished following an extended period of precipitation. After a storm in mid-January 1990, two surface water samples were collected from points upstream and downstream of the center of the site. Each of the surface water samples was collected from shallow pools on the canyon floor.

The filtered surface water samples were analyzed for 23 metals. None of the metals classified as persistent and bioaccumulative toxic substances were found in concentrations that exceed the soluble threshold limit.

Surface water samples were tested for Volatile Organics (EPA Method 624), Semi-Volatile Organics (EPA Method 625), and Metals (EPA Method 6000 and 7000 series). In addition to the laboratory analyses, field testing was performed on each of the surface water samples. The field testing parameters included temperature, pH, conductivity, hydrogen sulfide, redox potential, alkalinity, carbon dioxide, and color.

The values of the field and analytical tests conducted on the surface water samples indicate that none of the chemical constituents detected exceed the EPA National Interim Primary Drinking Water Standards. The results of these field and laboratory analyses are given in Table 4.2-1. Prior to the disposal of any wastes at Blind Canyon, background surface water samples would be collected up-canyon and downgradient and analyzed to ensure that surface water quality protection would be maintained.

Impacts

Potential geologic, groundwater, and surface water impacts are discussed below.

Geology. The risk of ground rupture due to seismic activity in the Blind Canyon area is considered low since no active faults were identified within the site boundaries. Any potential disturbance from seismic activity would most likely be in the form of rapid localized or regional uplifting, which is not likely to cause ground rupture. However, since the entire Southern California region is considered seismically active, there is the potential for a seismic event to impact the site in the form of strong ground motion.

Many types of landslides have been identified at Blind Canyon. From the standpoint of risk assessment, block slides or rotational/earthflow failures may pose the greatest risk with respect to potential construction activities. The undercutting of slopes, which are prone to block sliding, or the removal of toe support from areas of an existing rotational slide may cause landsliding to occur.

Groundwater. The discussion of groundwater impacts common to all landfills provides the necessary information. The reader is referred to Section 4.2.2.

Table 4.2-1 Surface Water Quality Results for Blind Canyon

Constituent	Laboratory ^{a,b}		Field testing ^{a,c}	
	East	West	East	West
Calcium	240	97	NT ^d	NT
Magnesium	73	34	NT	NT
Sodium	90	24	NT	NT
Potassium	6	ND ^c	NT	NT
Temperature, degrees F	NT	NT	52.0	42.2
True color (nm)	NT	NT	185	500
Apparent color (nm)	NT	NT	185	335
Alkalinity as CaCO ₃	NT	NT	161	171
Sulfate	51	31	NT	NT
Nitrogen, nitrate	700	140	NT	NT
Fluoride	0.08	8.7	NT	NT
Carbon dioxide	NT	NT	208.0	174.0
Redox potential, mV	NT	NT	55.0	11.0
pH, units	8.0	7.4	8.47	7.46
Conductivity, micromhos	1,780	810	2,060	930
Hardness	950	960	NT	NT
Dissolved oxygen	NT	NT	2.8	6.0-23.8
BOD, soluble	18	42	NT	NT
COD, soluble	30	130	NT	NT
Hydrogen sulfide	NT	NT	0	0.3-0.5
Total propionic and isobutyric acid	ND	ND	NT	NT
Butyric acid	ND	ND	NT	NT
Isovaleric acid	ND	ND	NT	NT
Valeric acid	ND	ND	NT	NT

^aSee Figure 4.2-1 for location of surface water sample locations. Samples collected on January 19, 1990.

^bUnits in mg/L unless otherwise noted.

^cNot detected.

^dNot tested.

Source: International Technology Corporation, 1990.

Surface Water. As a means of assessing the influence that the landfill project has on surface water runoff in canyon drainage basins, hydrographs were generated for the Blind Canyon drainage basins under predevelopment conditions. The total runoff under predevelopment conditions was determined to be 2,400 cubic feet per second (cfs). The increased runoff in comparing natural conditions to final developed landfill conditions (about 10 percent) is a result of a difference in the characteristics of the soils making up the surface cover and changes in topography. The final landfill cover soils are much less permeable than the natural soils existing in the canyon drainage basin; hence, a greater proportion of the precipitation that falls on the drainage basin is converted to runoff under final developed conditions. Estimates of surface water runoff under final developed conditions indicate that a 100-year storm would produce approximately 2,600 cfs of runoff at the base of the landfill.

Mitigation Measures

Mitigation measures for geologic, groundwater, and surface water impacts are discussed below.

Geology. Since the field mapping did not identify any known Holocene (11,000 years ago to the present) faults within the study area, no restriction on the location of refuse placement is required according to Subchapter 15. While strong ground motion can be expected from seismic events in the Southern California area, all structures and remedial control facilities will be designed and built to withstand the MPE.

In order to reduce the potential for slope instability caused by cover soil excavations, specific guidelines have been developed for each of the bedrock formations. These guidelines are as follows:

<u>Formation</u>	<u>Excavation slope inclination (Horizontal:Vertical)</u>
Chatsworth	2.0:1
Simi	1.5:1
Las Lajas	1.0:1
Saugus	1.0:1
Monterey	See below
Pico	See below

Evidence of soil creep and slumping were common in the northern part of the site in the Monterey and Pico Formations. Based on these observations, a general cut slope inclination cannot be recommended, and all excavations should be conducted only after detailed slope stability analyses. It

should also be noted that all of the above inclinations should be considered preliminary recommendations for excavating and that additional investigations will be required to confirm these results.

Groundwater. The discussion of groundwater mitigation measures common to all landfills provides the necessary information. The reader is referred to Section 4.2.2. A comprehensive, detailed monitoring system would be approved by the RWQCB prior to placement of refuse.

Surface Water. The discussion of surface water mitigation measures in Section 4.2.2 would be similar to all sites. Precise locations of drainage structures, however, would be site-specific and would be determined prior to site development. A drainage plan, including design details, would be approved by the RWQCB prior to issuance of waste discharge requirements and placement of refuse.

Unavoidable Impacts

None. Use of specified environmental control systems together with proven landfill operational techniques would mitigate potential significant impacts to less than significant levels.

4.2.4 Towsley Canyon

The following discussion on the geology and soils of the potential Towsley Canyon Landfill is based on a study conducted by Herzog Associates (1990).¹²¹

Regional Geology

Towsley Canyon is located within the Ventura Basin, a narrow trough whose axis approximately coincides with the Santa Clara River Valley. The basin trough is filled with a thick accumulation of sedimentary rocks of Cenozoic age (approximately 60 million years ago to the present). Included within these sedimentary rocks are the three formations found in Towsley Canyon: the Modelo, Towsley, and Pico Formations.

Project Site Setting

The project site setting is discussed in this section. Topics discussed include relevant geologic characteristics, groundwater, and surface water.

Bedrock Formations. Figure 4.2-2 is the geologic map of the potential Towsley Canyon Landfill site.

Modelo Formation. Rocks of the Modelo Formation crop out in the north-central and south portions of Towsley Canyon. The Modelo Formation typically includes four to five members composed of shale, sandstone, and conglomerate. The various members are not well defined in Towsley Canyon. In the north-central portion of the site, the Modelo Formation consists mainly of shale, siltstone, and fine-grained sandstone. In the southern part of the site, it consists mainly of siltstone, sandstone, and siliceous shale.

Towsley Formation. The Modelo Formation is overlain by, and interfingers with, a sequence of light-colored sandstone, conglomerate, and mudstone. This sequence of rocks was named the Towsley Formation because of its good exposures in the vicinity of Towsley Canyon. Based upon field mapping, the Towsley Formation has been divided into two fairly well-defined units: a sequence of thinly to thickly bedded, predominately fine-grained rocks and a sequence of thickly bedded to massive, predominately coarse-grained rocks. The fine-grained rocks are composed of siltstone, shale, and fine sandstone while the coarse-grained rocks are composed primarily of coarse sandstone and conglomerate.

Pico Formation. Throughout most of the eastern Ventura Basin, the Towsley Formation is overlain by the marine Pico Formation. The Pico Formation consists chiefly of siltstone, fine-grained silty sandstone, and light-colored sandstone and conglomerate. Within the site, the sandstone and conglomerate constitute a minor portion of the formation. The Pico is present within the extreme north-central and northeast portions of Towsley Canyon, along the proposed access road alignment, and within the central portion of the site.

A determination of the rippability of the bedrock formations at Towsley Canyon was conducted using seismic geophysical methods. The rippability of a material is defined as the ability of the soil or rock to be excavated by earth-moving equipment. Based on the results of the geophysical analysis, the materials at Towsley Canyon can be excavated as necessary using conventional equipment.

Surficial Deposits. Recent alluvium and older terrace deposits are widely distributed in Towsley Canyon. The deposits consist of crudely stratified, poorly to moderately well consolidated gravel, sand, and silt. At the mouths of numerous small swales and gullies, colluvial/alluvial fan deposits with moderately steep slopes are forming. The



0 1000 2000
SCALE IN FEET
(APPROXIMATE)

LEGEND:

GEOLOGIC UNITS

FILL	FILL DEPOSITS
Qat	ALLUVIUM AND TERRACE DEPOSITS
Qc	COLLUVIAL SOIL/DEBRIS FAN DEPOSITS
Qls	LANDSLIDE DEPOSITS
Tp	PICO FORMATION
Ttc, Ttf	TOWSLEY FORMATION
Tm	MODELO FORMATION

GEOLOGIC SYMBOLS

	GEOLOGIC CONTACT, DOTTED WHERE CONCEALED, QUERIED WHERE UNCERTAIN
	FAULT CONTACT, DOTTED WHERE CONCEALED, QUERIED WHERE UNCERTAIN (U - UPTHROWN BLOCK, D - DOWNTOWN BLOCK)
	LANDSLIDE DEPOSIT (ARROWS INDICATE DIRECTION OF MOVEMENT)
	ANTICLINE
	SYNCLINE
	STRIKE AND DIP OF BEDDING
	STRIKE AND DIP OF FRACTURES
	ORIENTATION OF SHEAR OR FOLIATION

FIELD EXPLORATION SYMBOLS

● D1	BOREHOLE
▲ A	SURFACE WATER SAMPLE LOCATION

Figure 4.2-2 Towsley Canyon Landfill Geologic Map

colluvium typically consists of unconsolidated to partially consolidated sand, silt, and gravel deposits with occasional large blocks of rock.

Folding and Faulting. The area in and around Towsley Canyon has been subjected to great stresses, which have caused the rock formations to form into anticlines and synclines. An anticline is a convex fold in the rocks in which the strata dip outward from the center axis. A syncline is a concave fold in the rocks in which the strata dip inward from both sides toward the center axis. Figure 4.2-2 indicates the locations and extent of such folding at Towsley Canyon.

During the field mapping and air photo analysis, no geomorphic features indicative of active faulting were identified. Therefore, there is little risk of fault related ground rupture at the site. Although the site has been folded and is located near the Santa Susana Fault, it exhibits little evidence of fault-related structural disturbance. No major faults have been mapped which extend through the site. One minor inactive fault, approximately 300 feet in length, was mapped at the northern boundary of the site. During the field mapping, structural displacement of bedding within several areas was observed. The faulted offsets and structural displacements were minor and appear to represent isolated areas of movement related to the folding of the area.

Seismicity. Towsley Canyon is situated within the Transverse Ranges Province. The Transverse Ranges are cut by numerous fault systems. In order to ascertain the potential effects from these faults, a seismicity evaluation using available literature was conducted on all active faults within a 60-mile radius of the site. For each of these faults, the MPE was calculated. The MPE is the largest earthquake likely to occur at least once during a 100-year time period and is regarded as a likely occurrence and not an assured event that will happen at a specific time. The name, distance from the site, and estimated MPE (in Richter magnitude) of faults within a 60-mile radius of Towsley Canyon are listed below:

<u>Active fault</u>	<u>Distance from site, miles</u>	<u>Maximum probable earthquake</u>
Santa Susana	2	6.5
Northridge Hills	6	6.5
San Fernando	7	6.6
San Cayetano	12	6.75
Sierra Madre	18	6.5
Santa Monica-Raymond Hill	21	7.0-7.5
Newport-Inglewood	26	7.0

<u>Active fault</u>	<u>Distance from site, miles</u>	<u>Maximum probable earthquake</u>
San Andreas	21	8.25
Big Pine	35	7.5
Garlock	38	7.75
White wolf	56	7.75

During the field mapping, there were no conditions found within the study area that would indicate the presence of materials that may be susceptible to seismically induced liquefaction or densification. Although alluvial sediments at the site may contain loose granular soils, extensive deposits of liquefiable sand would not be likely to occur in an area of steep narrow canyons that contain abundant gravel deposits. Therefore, the potential risk of liquefaction is very low. Landsliding or debris flows may be induced seismically, but the type of seismic slope failures that would be expected are considered similar to those discussed in the following section on slope stability.

Slope Stability. Several types of landslides have been found at Towsley Canyon. The types of slope failure include rock falls, debris slides, debris flows, rotational slumps, and translational bedding plane block slides. The sizes of the slides vary considerably. Features were observed that involved relatively small amounts of material (less than 20 cubic yards) to massive failures involving hundreds of thousands of cubic yards and covering from 50 to 100 acres. Debris slides and debris flows probably represent the most common type of failure in the Towsley Canyon area. Both of these slides are typified by relatively long and narrow scars in which the soil/rock materials have partially liquefied and flowed downslope. Debris slides are relatively fast moving and, due to their fluid nature, they can impact areas well removed from the source area. They generally tend to occur during periods of intense storm activity, although they may also be triggered by earthquakes.

Bedding plane failures appear to be relatively common throughout the entire site, as evidenced by the presence of barren planar expanses of steeply dipping rock on the hillside. The surface of the bedding plane contact is often well exposed, and it appears to be common for sandstone blocks overlying siltstone or shale to be subject to failure. Although somewhat less common, rotational/earthflow failures are also found at the site and may involve large quantities of soil/rock material.

Permeability Evaluation. Packer-type permeability testing was conducted in each of the rotary wash boreholes indicated on Figure 4.2-2. The following discussion outlines the general methodology and findings of the packer-type permeability testing.

The core samples obtained from the drilling operation were carefully examined by a registered geologist. Based on this examination, representative intervals of the bedrock formation were selected for permeability testing. Permeability of the bedrock formations at Towsley Canyon varied from 3.83×10^{-3} to 1.23×10^{-9} centimeters per second (cm/sec). This variation was due to the different rock types tested and the structural setting of the test locations. The formation and in situ permeability range of the rocks at Towsley Canyon are presented below:

<u>Formation</u>	<u>Rock type</u>	<u>Permeability range, cm/sec</u>
Unfractured Modelo	Shale, sandstone, cong.	1×10^{-8}
Fractured Modelo	Shale, sandstone, cong.	$1 \times 10^{-3} - 1 \times 10^{-5}$
Coarse Towsley	Sandstone, cong.	$1.14 \times 10^{-6} - 1.23 \times 10^{-9}$
Fine Towsley	Siltstone, shale, sandstone	$9.3 \times 10^5 - 3.2 \times 10^{-8}$
Fractured Pico	Siltstone, sandstone	$3.8 \times 10^{-3} - 3.1 \times 10^{-8}$
Unfractured Pico	Siltstone, sandstone	1×10^{-8}

Groundwater. The following presents a general discussion of the groundwater conditions found at Towsley Canyon, groundwater sampling locations, and the results of the sample analyses.

In general, the rock formations underlying the Towsley Canyon site are considered nonwater bearing since they are unable to produce usable quantities of groundwater. Groundwater was only encountered along the principle ephemeral drainage canyons. There is no evidence that this groundwater represents anything more than localized near surface underflow (alluvial canyon water) feeding the winter and spring streams within the site. The low formation permeability, except in highly fractured areas, would greatly limit the quantity of water that could be extracted from this shallow resource.

Three boreholes were drilled in the canyon bottoms along Towsley Creek. Two of these borings (D1 and D10) were drilled downgradient of the Towsley oil field and one boring (D8) was drilled upgradient of the Towsley oil field. See Figure 4.2-2 for locations. At each of these sites, the alluvial canyon water elevation was approximately that of the surface water elevation.

Field measurements of dissolved oxygen, conductivity, pH, hydrogen sulfide, color, odor, and temperature were taken. Groundwater samples were also analyzed in the laboratory for general mineral, physical, and organic indicator parameters. Results of these analyses are given in Tables 4.2-2 and 4.2-3.

Filtered groundwater samples were analyzed for 23 metals. None of the metals classified as persistent and bioaccumulative toxic substances were found in concentrations that exceed the soluble threshold limit concentration (per California Code of Regulations, Article 11, Section 66699). In general, metal concentrations in the groundwater at Towsley Canyon are below instrument detection limits. Elevated concentrations of sodium, chloride, conductivity, total dissolved solids, bicarbonate, and alkalinity in D1 suggest interconnection with oil field production or formation water. The chemical oxygen demand (COD) of this water is high relative to the other groundwater samples tested. It is also clear that these constituents are entering the surface water downstream of the Towsley oil field.

The sodium concentrations are noticeably higher in Borehole D1. Groundwater penetrated by Boring D1 was within a localized pressure zone. Some of this water and other natural seeps derived from this pressurized zone may be contributing to the slightly elevated sodium concentration found at surface water sampling, Location A, described below. At the time D1 was plugged, water with minor gas bubbles was trickling out of the boring. It should be noted that Boring D1 was drilled on the axis of the anticline that created the structural trap for the Towsley oil field. Groundwater from Boring D10 does not have the elevated sodium and chloride concentrations found in D1. Unlike D1, it has high total organic halogens (TOH) and biological oxygen demand (BOD). Boring D8 is the groundwater sample furthest upgradient from the Towsley oil field and, therefore, may be more representative of background groundwater quality further up Towsley Canyon.

VOCs were extracted from the groundwater samples and tested for priority pollutants, using EPA Methods. No VOCs above the practical limit of the testing equipment were found in the three groundwater samples.

Table 4.2-2 Field Testing Water Quality Results for Towsley Canyon

Field test parameters	Groundwater, boreholes ^a			Surface water, sample location ^a	
	D1	D8	D10	A	B
Salinity, percent	7.5	b	1.9	2	1.5
pH	6.9	6.9	6.9	6.9	7.5
Conductivity, micromhos	1,240	1,180	12,300	4,100	2,569
Dissolved oxygen, ppm	1.4	b	1.6	8.8	10.1
Color	Clear	Light tan	Light blue	Yellow green	Clear
Odor	None	None	Faint H ₂ S	None	None
Hydrogen sulfide	ND ^c	b	ND	ND	
Temperature, degrees Celsius	22.4	b	16.1	14	24.5

^aSee Figure 4.2-2 for location of boreholes and surface water sample locations.

^bNot tested.

^cNot detected.

Source: Herzog Associates, 1990.

Table 4.2-3 Laboratory Water Quality Results for Towsley Canyon

Constituent	Groundwater, boreholes ^{a,b}			Surface water, sample location ^{a,b}	
	D1	D8	D10	A	B
Calcium	60	5	58	210	220
Magnesium	30	2	210	180	150
Sodium	3,000	260	600	770	230
Potassium	23	<3	6	11	.8
Alkalinity as CaCO ₃	2,600	300	1,100	1,320	330
Bicarbonate as HCO ₃	3,172	366	1,300	1,580	400
Carbonate as CO ₃	<1	<1	<1	<1	<1
Hydroxide as OH	<1	<1	<1	<1	<1
Chloride	3,300	30	20	730	16
Sulfate	2	200	1,400	1,200	1,400
Nitrogen, nitrate	4	2.2	<0.1	<0.1	0.3
Nitrate	18	9.4	<0.4	<0.4	1.3
Fluoride	<0.1	<0.1	<0.1	3.5	2.9
Calcium as CaCO ₃	150	13	140	530	550
Magnesium as CaCO ₃	120	8	360	740	620
Sum of cations	138	11.9	46	59	33
Sum of anions	144.7	11.2	47	71	36
pH, units	6.6	7.7	7.9	7.2	7.2
Conductivity, micromhos	13,000	1,200	3,850	5,300	2,800
Dissolved solids, total	9,600	870	2,360	3,800	2,400
Hardness	310	20	1,200	1,400	1,300
Total organic carbon	7.7	4.4	5.5	27	12
Total organic halogen	<10	360	550	120	160
BOD, soluble	14	<3	32	<3	<3
COD, soluble	100	13	9	130	60
Total proprionic and isobutyric acid	0.6	<0.1	<100	<2	<0.1
Butyric acid	0.3	<0.1	<100	<2	<0.1
Isovaleric acid	0.3	<0.1	<100	<2	<0.1
Valeric acid	0.4	<0.1	<100	<2	<0.1

^aSee Figure 4.2-2 for location of boreholes and surface water sample locations.

^bUnits in mg/L unless otherwise noted.

Source: Herzog Associates, 1990.

Groundwater samples were also tested for semivolatile organics, organic acids, pesticides, and PCBs, using EPA Method 625/8270. None of these compounds was found at concentrations above the practical detection limit.

Surface Water. The following presents a general discussion of the surface water conditions found at Towsley Canyon, surface water sampling locations, and the results of the sample analyses.

Towsley Canyon is located on the southern perimeter of the Santa Clara River Basin. The general direction of canyon drainage following discharge from the area of the potential landfill site is to the northeast. Flows to this point are in an unimproved channel. Wiley Canyon located east and adjacent to Towsley Canyon contributes to drainage flows prior to entering the South Fork of the Santa Clara River. The South Fork flows north and enters the Santa Clara River about 6 miles north of the landfill site. Both the South Fork and the Santa Clara River are improved channels with lined sides and natural bottoms.

Numerous small ephemeral streams flow in the winter and spring as a result of local rainfall. Several small waterfalls and streams that were observed in April had dried up by June. These waterfalls are located in the southeast portion of the site outside of the proposed fill area. In addition to the ephemeral streamflow, several water seeps were identified in the main canyon around the Towsley Canyon oil field.

Two surface water quality sampling locations were selected in the Towsley Canyon drainage network. These locations are representative of the streamflow observed during the late spring and summer. The sampling sites were selected based on quantity of flow, accessibility, and location relative to the Towsley oil field. Location A was in Towsley Creek within the narrow canyon, downstream from the oil field. Sampling Location B was at the confluence of Towsley Creek and an unnamed tributary in the southern portion of the site. This location was upstream from the oil field and dries out completely in the late summer. Figure 4.2-2 indicates the surface water sampling locations.

Field measurements of dissolved oxygen, conductivity, pH, and hydrogen sulfide gas were taken for each surface water sample. Also described were physical parameters including color, odor, and temperature at the time of collection. Surface water samples were also analyzed in the laboratory for a suite of general mineral, physical, and organic indicator parameters. Results of the field and laboratory analyses are given in Tables 4.2-2 and 4.2-3.

The filtered surface water samples were analyzed for 23 metals. None of the metals classified as persistent and bioaccumulative toxic substances was found in concentrations that exceed the soluble threshold limit. In general, metal concentrations in the surface water at Towsley Canyon are found at levels near drinking water standards. Elevated concentrations of sodium, chloride, conductivity, total dissolved solids, bicarbonate, and alkalinity from surface water at Location A suggest that it is interconnected with oil field production or formation water. The COD of this water is high relative to the other surface water sample tested.

VOCs were extracted from the surface water samples and tested for priority pollutants using EPA Methods. Surface water at Location A contained acetone, 20 micrograms per liter (ug/L); methylene chloride, 160 ug/L; toluene, 0.7 ug/L; trichlorofluoromethane (F-11), 1.6 ug/L; and xylenes, 0.7 ug/L. Surface water upstream from the oil field was found to contain methylene chloride at 16 ug/L. Methylene chloride, at the level detected in this sample, is typical of laboratory contamination and is probably not present in the water sample.

The surface water samples were also tested for semivolatile organics, organic acids, pesticides, and PCBs using EPA methods. None of these compounds was found at concentrations above the practical detection limit.

It appears that oil and water seeps from the Towsley Canyon oil field are affecting the quality of the drainage along Towsley Creek. Surface water samples obtained from the ephemeral stream flow upgradient of the oil field were of good quality and showed none of the pollutants found in the downgradient samples.

Impacts

Potential geologic, groundwater, and surface water impacts are discussed below.

Geology. The risk of ground rupture due to seismic activity in the Towsley Canyon area is considered low since no active faults were identified within the site boundaries. Any potential disturbance from seismic activity would most likely be in the form of rapid localized or regional uplifting, which is likely to cause ground rupture. However, since the entire Southern California region is considered seismically active, there is the potential for a seismic event to impact the site in the form of strong ground motion.

Many types of landslides have been identified at Towsley Canyon. From the standpoint of risk assessment, block slides or rotational/earthflow failures may pose the greatest risk with respect to potential construction activities. The undercutting of slopes which are prone to block sliding, or the removal of toe support from areas of an existing rotational slide, may cause landsliding to occur.

Groundwater. The discussion of groundwater impacts common to all landfills provides the necessary information. The reader is referred to Section 4.2.2.

Surface Water. To estimate the maximum surface water runoff at Towsley Canyon under final development conditions, a 100-year storm flow was calculated based on the 50-year storm flow multiplied by a conversion factor. This relationship has been empirically developed by the Los Angeles County Flood Control District staff. The 100-year storm flow for the proposed Towsley Canyon under final landfill development conditions is estimated to produce approximately 3,600 cfs of runoff. The total runoff under predevelopment conditions was not calculated but would be about 10 percent less than under developed conditions. The increased runoff is a result of a differing in the characteristics of the soils making up the surface cover and changes in topography.

Mitigation Measures

Mitigation measures for geologic, groundwater, and surface water impacts are discussed below.

Geology. Since the field mapping did not identify any known Holocene (11,000 years ago to the present) faults within the study area, no restriction on the location of refuse placement is required according to Subchapter 15. While strong ground motion can be expected from a seismic event in the Southern California area, all structures and remedial control facilities will be designed and built to withstand the maximum probable earthquake.

In order to reduce the potential for slope instability caused by cover soil excavations, specific guidelines have been developed for each of the bedrock formations. These guidelines are:

<u>Formation</u>	<u>Dip condition</u>	<u>Excavation slope inclination (Horizontal:Vertical)</u>
Modelo	Antidip slope	2.00:1
Pico (fine)	Antidip slope	1.75:1

<u>Formation</u>	<u>Dip condition</u>	<u>Excavation slope inclination (Horizontal:Vertical)</u>
	Dip slope	2.00:1
Pico (coarse)	Antidip slope	1.50:1
Towsley (fine)	Dip slope	2.00:1
Towsley	Antidip slope	1.50:1
(coarse)	Dip slope	1.50:1

The above inclinations should be considered preliminary recommendations for excavations at Towsley Canyon. Additional investigations may be required to confirm these results and to evaluate steeper temporary excavation inclinations. A thorough study will be conducted prior to any excavation on site to determine appropriate excavations which would prevent the occurrence of slides.

Groundwater. The discussion of groundwater mitigation measures common to all landfills provides the necessary information. The reader is referred to Section 4.2.2. A comprehensive, detailed monitoring system would be approved by the RWQCB prior to placement of refuse.

Surface Water. The discussion of surface water mitigation measures in Section 4.2.2 would be similar to all sites. Precise locations of drainage structures, however, would be site-specific and would be determined prior to site development. A drainage plan, including design details, would be approved by the RWQCB prior to issuance of waste discharge requirements and placement of refuse.

Unavoidable Impacts

None. Use of specified environmental control systems together with proven landfill operational techniques would mitigate significant impacts to less than significant levels.

4.2.5 Mission-Rustic-Sullivan Canyons Landfill Complex

As indicated in Chapter 3, the Mission-Rustic-Sullivan Canyons Landfill complex would be operated such that Mission Canyon would be operated for the first 12-year period followed by operation of the Rustic-Sullivan Canyon Landfill site. Accordingly, Mission Canyon is discussed first in this section followed by Rustic-Sullivan Canyons.

4.2.5A Mission Canyon

The following discussion on the geology and soils of the Mission Canyon portion of the potential Mission-Rustic-Sullivan Canyons Landfill complex is based on the Mission Canyon Final EIR (Los Angeles County Sanitation Districts, 1980).

Regional Geology

The Mission Canyon area is located in the east-central portion of the Santa Monica Mountains, within the Transverse Ranges Geomorphic Province of Southern California. The Transverse Ranges extend eastward from the Channel Islands, approximately 200 miles, to the Pinto and Eagle Mountains in the Central Mojave Desert. The Santa Monica Mountains are located along the southwestern margin of the Transverse Ranges and are comprised of marine sedimentary rocks, intrusive igneous rocks, and volcanic rocks ranging in age from Pleistocene to Jurassic (approximately 2 to 190 million years ago). The proposed landfill area is characteristic of the Transverse Ranges Province, with long, narrow ridges and deep, steep-sided valleys.

Project Site Setting

The project site setting is discussed in this section. Topics discussed include relevant geologic characteristics, groundwater, and surface water.

Bedrock Formations. Figure 4.2-3 is the geologic map of Mission Canyon. The vicinity is underlain by a diverse assemblage of sedimentary, igneous, and metamorphic strata that range in age from Jurassic to Holocene (190 million years ago to the present). While the dominant rock type found at the site consists of slate. Other rock types present include, granitic, volcanic, and sedimentary rocks.

Santa Monica Slate. The Santa Monica Slate is the oldest and most dominant rock unit found in the site area. It covers approximately 90 percent of the total mapped area. The metamorphic Santa Monica Slate is highly foliated (laminated) and displays a prominent slatelike cleavage which is thought to be parallel to the original sedimentary bedding prior to the formation being metamorphosed.

The Santa Monica Slate is composed primarily of fine grained mica and minor amounts of very fine grained quartz and feldspar. Fresh samples of the slate are dark gray to bluish gray, which turns to a light brown gray when weathered. The formation of the Santa Monica Slate occurred due to the regional metamorphism of a parent sedimentary rock sequence composed of shale, siltstone, and graywacke.

Modelo Formation. The Modelo Formation is present in small areas in the northwest parts of the site. It is composed of sandstones, shales, and a basal conglomerate. The Modelo Formation rests on top of the Santa Monica Slate and granitic rocks.

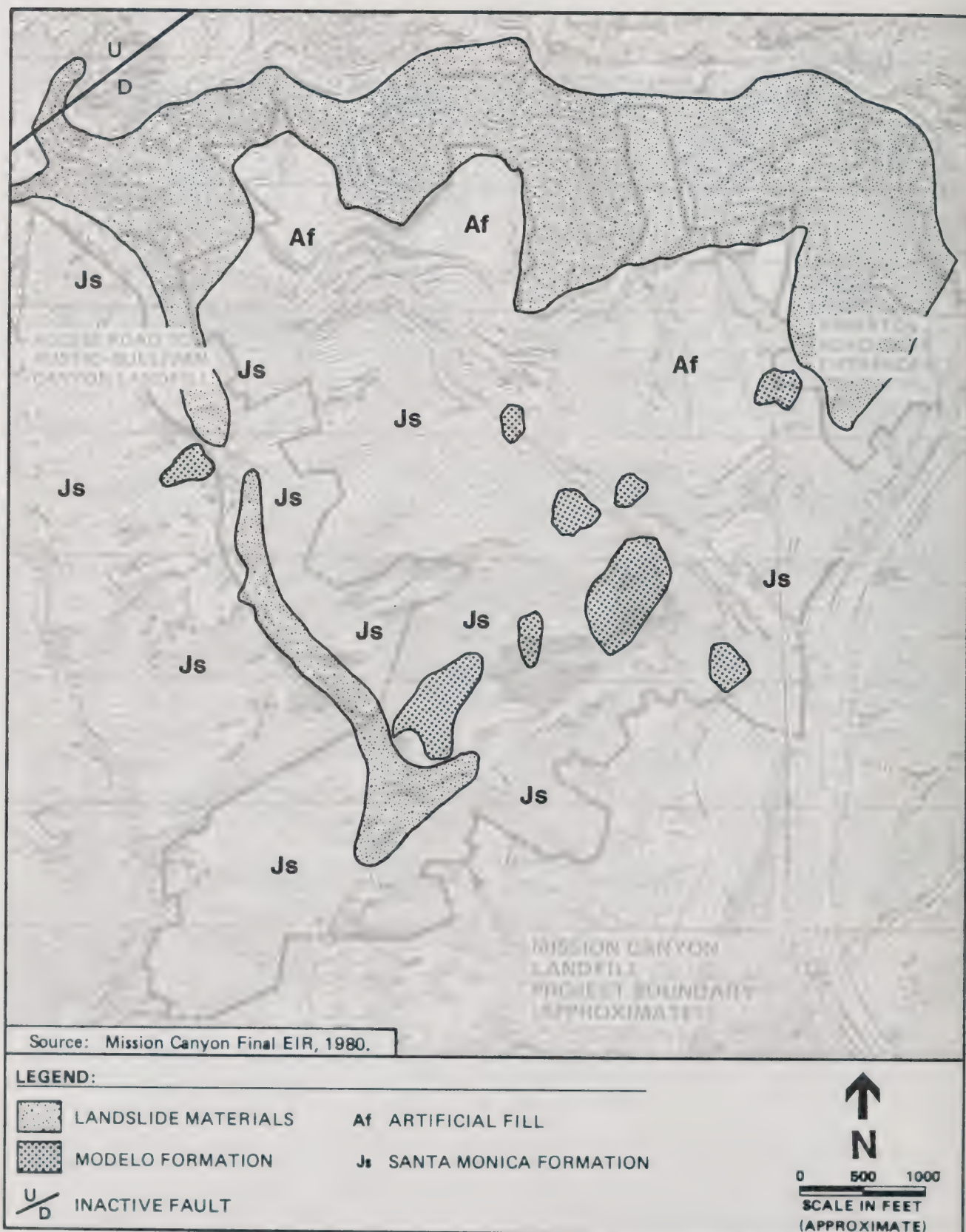


Figure 4.2-3 Mission Canyon Landfill Geologic Map

A determination of the rippability of the bedrock formations at Mission Canyon was conducted using seismic geophysical methods. The rippability of a material is defined as the ability of the soil or rock to be excavated by earth-moving equipment. Based on the results of the geophysical analysis, most of the materials at the site can be excavated as necessary using conventional equipment.

Surficial Deposits. Alluvial materials derived from the erosion of the bedrock formations by running water was found within the stream drainages at the bottom of the canyons. The alluvium is composed of poorly sorted, crudely stratified, silty sand with intermixed gravels, cobbles, and boulders. The maximum thickness of the alluvium is about 25 feet. The composition of the alluvium in the main canyon drainages is dominated by material derived from the Santa Monica Slate.

Folding and Faulting. There are a number of minor, ancient faults in the Mission Canyon area. The minor faults are generally too small to map individually and do not present a significant seismic risk nor routes for water or landfill gas migration. A major ancient fault is located approximately 1/2 mile northwest of the Mission Canyon Landfill and is shown on Figure 4.2-3. This fault, though major, is not active.

Slope Stability. Many portions of the Mission Canyon area are affected by soil movements associated with landsliding and creep. The Santa Monica Formation is most affected by soil movements. Factors which influence soil failures in the Santa Monica Slate include inclination of bedding strata, weather-weakened contacts, structural fractures, shear and gouge zones, steep slopes, weak or loose surface soils and weathered bedrock, seismic effects, and adverse load changes. Many slope failures can occur following periods of heavy rainfall. The upper 1 to 10 feet of the Santa Monica Slate is covered with a mantle of weathered bedrock and loose soils, which makes it susceptible to slumps, slides, and creeps following heavy rainfall. Approximate locations of some landslides are indicated on Figure 4.2-3.

Permeability Evaluation. Permeability data from geologic borings show that the alluvium is capable of transmitting groundwater at rates varying from 8.3×10^{-3} cm/sec to 6.8×10^{-4} cm/sec. Weathered and fractured Santa Monica bedrock had a permeability ranging from 6.2×10^{-4} cm/sec to 9.1×10^{-5} cm/sec. Unweathered and unjointed bedrock is very impermeable with an effective permeability coefficient of less than 1×10^{-8} cm/sec.

Groundwater. The underlying bedrock at Mission Canyon is Santa Monica Slate, a formation considered to be nonwater bearing. Water is present only locally in fractures near the surface in the weathered zone and in the alluvium.

A total of 11 monitoring wells and piezometers have been constructed on site; 6 of the wells are upgradient of the fill and utilized to characterize background conditions, and 5 of the wells are downgradient. The low levels of VOCs detected indicate there is no presence of leachate.

Surface Water. Surface water sampling has been conducted from an 8-foot by 10-foot box channel. Very low concentrations of a few volatile organic compounds, all which are often ubiquitously found in the environment and which are also common laboratory contaminants, were found during initial sampling. The levels of these compounds detected are far below levels of health significance. Drainage from Mission Canyon branches into Sepulveda and Mandeville Canyons and is ultimately collected in box channels which drain into the Santa Monica Canyon channel.

Impacts

Potential geologic, groundwater, and surface water impacts are discussed below.

Geology. There are no significant geological impacts due to landfilling in Mission Canyon.

Earthquake hazards do not appear to be significant at this site. The MPE from the nearest active fault, the Santa Monica-Raymond Hill, is approximately 7 on the Richter scale.

Landsliding does not appear to create a significant impact. The majority of the slides will be removed for cover or are below the proposed fill elevations. Permanent drainage structures associated with the proposed fill design would be located so as not to undercut existing landslides areas.

Groundwater. The discussion of groundwater impacts common to all landfills provides the necessary information. The reader is referred to Section 4.2.2.

Surface Water. For the potential Mission Canyon site, the 100-year storm flow was calculated to be 2,300 cfs, 2,200 cfs of which would be runoff in Mission Canyon, and 170 cfs to Mandeville Canyon. These flows represent the maximum anticipated runoff generated from within the canyon drainage basins.

Mitigation Measures

Mitigation measures for geologic, groundwater, and surface water impacts are discussed below.

Geology. Since the field mapping did not identify any known Holocene (11,000 years ago to the present) faults within the study area, no restriction on the location of refuse placement is required according to Subchapter 15. While strong ground motion can be expected from seismic events in the Southern California area, all structures and remedial control facilities would be designed and built to withstand the maximum probable earthquake.

Groundwater. The discussion of groundwater mitigation measures common to all landfills provides the necessary information. The reader is referred to Section 4.2.2. A comprehensive, detailed monitoring system would be approved by the RWQCB prior to placement of refuse.

Surface Water. The discussion of surface water mitigation measures in Section 4.2.2 would be similar to all sites. Precise locations of drainage structures, however, would be site-specific and would be determined prior to site development. A drainage plan, including design details, would be approved by the RWQCB prior to issuance of waste discharge requirements and placement of refuse.

Unavoidable Impacts

None. Use of specified environmental control systems together with proven landfill operational technologies would mitigate potential significant impacts to less than significant levels.

4.2.5B Rustic-Sullivan Canyons

The following discussion on the geology and soils of the potential Rustic-Sullivan Canyons Landfill is based on a study conducted by IT Corporation (1990).¹²⁰

Regional Geology

The Rustic-Sullivan Canyons area is located in the east-central portion of the Santa Monica Mountains, within the Transverse Ranges Geomorphic Province of Southern California. The Transverse Ranges extend eastward from the Channel Islands, approximately 200 miles, to the Pinto and Eagle Mountains in the central Mojave Desert. The Santa Monica Mountains are located along the southwestern margin of the Transverse Ranges and are comprised of marine sedimentary rocks, intrusive igneous rocks, and volcanic rocks ranging in age from Pleistocene to Jurassic (approximately 2 to 190 million years ago). The proposed landfill area is characteristic of the Transverse Ranges Province, with long, narrow ridges and deep, steep-sided valleys.

Project Site Setting

The project site setting is discussed in this section. Topics discussed include relevant geologic characteristics, groundwater, and surface water.

Bedrock Formations. Figure 4.2-4 is the geological map at the potential Rustic-Sullivan Canyons Landfill site. The Rustic-Sullivan Canyons vicinity is underlain by a diverse assemblage of sedimentary, igneous, and metamorphic strata that range in age from Jurassic to Holocene (190 million years ago to the present). The dominant rock type found at the site consists of slate. Other rock types present include, granitic, volcanic, and sedimentary rocks.

Santa Monica Slate. The Santa Monica Slate is the oldest and most dominant rock unit found in the site area. It covers approximately 90 percent of the total mapped area. The metamorphic Santa Monica Slate is highly foliated (laminated) and displays a prominent slatelike cleavage, which is thought to be parallel to the original sedimentary bedding prior to the formation being metamorphosed.

The Santa Monica Slate is composed primarily of fine grained mica and minor amounts of very fine grained quartz and feldspar. Fresh samples of the slate are dark gray to bluish gray, which turns to a light brown to brownish gray when weathered. The formation of the Santa Monica Slate occurred due to the regional metamorphism of a parent sedimentary rock sequence composed of shale, siltstone, and graywacke.

Granitic Rocks. Granitic rocks composed of granodiorite to quartz diorite intrude the Santa Monica Slate. These plutons (bodies of igneous rock that formed below the surface of the earth) form more resistant and relatively high relief outcrops at the site. The age of the granitic rocks has been established to be approximately 102 million years.

Middle Miocene Igneous Rocks. Middle Miocene igneous rocks are exposed in the northwest parts of the site. These rocks include some ancient lava flows, dikes, and sills (a small, flattened pluton) composed primarily of basalt, andesite, and rhyolite. These rocks were apparently formed by severe volcanic eruptions.

Modelo Formation. The Modelo Formation is present in small areas in the northwest parts of the site. It is composed of sandstones, shales, and a basal conglomerate. The Modelo Formation rests on top of the Santa Monica Slate and granitic rocks.

A determination of the rippability of the bedrock formations at Rustic-Sullivan Canyons was conducted using seismic geophysical methods. The rippability of a material is defined as the ability of the soil or rock to be excavated by earth-moving equipment. Based on the results of the geophysical analysis, most of the materials at the site can be excavated as necessary using conventional equipment. At depths greater than 125 feet, unweathered Santa Monica Slate may be rippable using only specialized equipment or methods.

Surficial Deposits. Alluvial materials derived from the erosion of the bedrock formations by running water was found within the stream drainages at the bottom of the canyons. The alluvium is composed of poorly sorted, crudely stratified, silty sand with intermixed gravels, cobbles, and boulders. The maximum thickness of the alluvium is about 25 feet. The composition of the alluvium in the main canyon drainages is dominated by material derived from the Santa Monica Slate.

Folding and Faulting. Regionally, the Santa Monica Slate has been folded into a west-plunging anticline. As a result of this folding, the Santa Monica Slate has undergone brittle deformation, which formed systemically oriented joints and fractures. While the foliation of the Santa Monica Slate can be steeply dipping, the rocks of the Modelo Formation are relatively horizontal or shallow dipping and lay on top of the slate.

Many steeply dipping faults intersect the rock formations at the site. None of the faults cut through the alluvium in the canyons, indicating that the faults are older and probably related to folding in the area.

Seismicity. Rustic-Sullivan Canyons are situated in the Santa Monica Mountains, which lie within the Transverse Ranges Province. The Transverse Ranges are cut by numerous fault systems. In order to ascertain the potential effects from these faults, a seismicity evaluation using available literature was conducted on all active faults within a 60-mile radius of the site. For each of these faults, the maximum probable earthquake (MPE) was calculated. The MPE is the largest earthquake likely to occur at least once during a 100-year time period and is regarded as a likely occurrence and not an assured event that will happen at a specific time. The name,

distance from the site, and estimated maximum probable earthquake (in Richter magnitude) of faults within a 60-mile radius of Rustic-Sullivan Canyons are listed below:

<u>Active fault</u>	<u>Distance from site, miles</u>	<u>Maximum probable earthquake</u>
Santa Monica-Raymond Hill	4	7.0-7.5
Newport-Inglewood	12	7.0
Santa Susana	13	6.5
Sierra Madre	15	6.5
Whittier-Elsinore	27	6.5
San Andreas	40	8.25
Garlock	50	7.75
Big Pine	53	7.5

Slope Stability. Small-to-large landslides are common throughout the proposed landfill area. Almost all the landslides occur in the Santa Monica Slate. Two primary type of landslides are present at the site: rock fall/topple and block-glide. Rock fall/topple occurs when the Santa Monica Slate gets undercut by erosion and portions of the rock break off and fall down the slope. Block-glide landslides are found primarily where the foliation or fracture orientation of the Santa Monica Slate dips out of the slope of the hillside. In addition to the landsliding, soil creep occurs on a much smaller scale and involves the downward movement by gravity of the top few feet of weathered bedrock or soil material.

Permeability Evaluation. Packer-type permeability testing was conducted in each of the rotary wash boreholes completed during the drilling phase of the feasibility investigation. Figure 4.2-11 indicates the locations of the boreholes. The following discussion outlines the general findings of the packer-type permeability testing. A detailed presentation of the methodology can be found in the technical report.

Core samples obtained from the boreholes were carefully examined by a geologist. Based on this examination, representative intervals of the bedrock formation were selected for permeability testing. A total of approximately five successful packer-type permeability tests were run on the granitic rocks and Santa Monica Slate at Rustic-Sullivan Canyons. The formation, predominate rock type, and range of calculated permeability are highlighted below:

<u>Formation</u>	<u>Rock type</u>	<u>Permeability range, cm/sec</u>
Granitic Rock	Granodiorite	1.5×10^{-5} - 5.0×10^{-5}
Santa Monica Slate	Slate	4.5×10^{-5} - 7.6×10^{-6}

Groundwater. The Rustic-Sullivan Canyons are located approximately 1.8 miles south of the San Fernando Groundwater Basin and approximately 2 miles north of the Santa Monica Groundwater Basin. Groundwater movement within the site is primarily along the canyon bottoms in the alluvium and upper weathered zone of the bedrock. Overall, the underlying Santa Monica Slate is considered nonwater bearing by the Department of Water Resources.

Within 1 mile of the proposed landfill site, five water wells have been identified. These wells are located east and southeast of the site in Mandeville Canyon. According to available data, the wells are privately owned, produce small quantities of water, and were used for irrigation purposes. Since the wells are located in the Mandeville Canyon drainage and not directly downgradient of the site, the proposed landfill would have no impact on them.

Groundwater was encountered at one location within the study area. The only drill hole to encounter groundwater was boring HSA-1 (see Figure 4.2-4) at a depth of approximately 19 feet. While this boring contained some groundwater, it was not in sufficient amounts to obtain a sample. Another location where groundwater was identified was at a natural spring located approximately 1/4 mile south of the Sullivan Canyon study area.

Results from the laboratory water quality analysis on the spring indicate that none of the organic or metal analytical parameters tested for appeared at levels in excess of the California Department of Health Services or EPA Drinking Water Standards. However, the sample tested indicated levels above drinking water standards for electrical conductivity, total dissolved solids, and sulfate. These values reflect the natural levels of these parameters expected to be found in the groundwater.

In addition to the laboratory analyses, groundwater samples from the spring were also tested in the field for the following parameters: dissolved oxygen, conductivity, pH, hydrogen sulfide, color, odor, temperature, alkalinity, redox potential, and dissolved carbon dioxide. Results of these analyses are given in Tables 4.2-4 and 4.2-5.

Surface Water. The Rustic-Sullivan Canyons are located in the Los Angeles River Basin. Drainage from Rustic-Sullivan Canyons follows an unlined channel and flows into the Santa Monica Canyon channel. This channel is lined and discharges into the Pacific Ocean.

Table 4.2-4 Results of Field Water Quality Testing
From Natural Spring in Sullivan Canyon

<u>Field test parameters</u>	<u>Concentration/value</u>
Dissolved oxygen	7.6 mg/l O ₂
Conductivity	1,525 micromhos per centimeter
Color	Clear
Odor	None
pH	6.28
Redox potential	97 mV
Hydrogen sulfide	0.0 mg/l
Temperature	20.5 degrees C
Alkalinity	350 mg/l
Dissolved carbon dioxide	229 mg/l

Source: International Technology Corporation, 1990.

Table 4.2-5 Results of Laboratory Water Quality Testing
From Natural Spring in Sullivan Canyon

<u>Constituent</u>	<u>Concentration/value</u>
pH	7.5
Conductivity	1,780 micromhos per centimeter
TDS	1,370 mg/l
Sulfate	600 mg/l
Chloride	40 mg/l
Nitrate	0.1 mg/l
Hardness	1,030 mg/l
COD	70 mg/l
Calcium	200 mg/l
Mercury	0.0002 mg/l
Zinc	0.05 mg/l

Note: Only compounds detected are shown in the table.

Source: International Technology Corporation, 1990.

While no collectable surface water was encountered during the feasibility investigation at Rustic-Sullivan Canyons, significant surface water flow is expected during periods of rainfall. Prior to the disposal of any wastes at Rustic-Sullivan Canyons, background surface water samples would be collected and analyzed so that appropriate water quality protection standards could be established for the site.

When surface water samples are obtained, they will be tested for volatile organics (EPA Method 624), semivolatile organics (EPA Method 625), and metals (EPA Method 6000 and 7000 series). In addition to the laboratory analyses, field testing will be performed on each of the surface water samples. The field testing parameters will include temperature, pH, conductivity, hydrogen sulfide, redox potential, alkalinity, carbon dioxide, and color.

Impacts

Potential geologic, groundwater, and surface water impacts are discussed below.

Geology. The risk of ground rupture due to seismic activity in the Rustic-Sullivan Canyons area is considered low since no active faults were identified within the site boundaries. Any potential disturbance from seismic activity would most likely be in the form of rapid localized or regional uplifting, which is not likely to cause ground rupture. However, since the entire Southern California region is considered seismically active, there is the potential for a seismic event to impact the site in the form of strong ground motion.

Two primary types of landslides have been identified at Rustic-Sullivan Canyons. From the standpoint of risk assessment, block-glide landslides may pose the greatest risk with respect to potential construction activities. The undercutting of slopes which are prone to block-gliding may cause landsliding to occur.

Groundwater. The discussion of groundwater impacts common to all landfills provides the necessary information. The reader is referred to Section 4.2.2.

Surface Water. At Rustic-Sullivan Canyons under final development conditions a 100-year storm flow was calculated based on the 50-year storm flow multiplied by a conversion factor. This relationship has been empirically developed by the Los Angeles County Flood Control District staff. The 100-year storm flow for the proposed Rustic-Sullivan Canyons under final landfill development conditions is estimated to

produce approximately 4,000 cfs of runoff. The total runoff under predevelopment conditions was not calculated but would be about 10 percent less than under developed conditions. The increased runoff is a result of a difference in the characteristics of the soils making up the surface cover and changes in topography.

Mitigation Measures

Mitigation measures for geologic, groundwater, and surface water impacts are discussed below.

Geology. Since the field mapping did not identify any known Holocene (11,000 years ago to the present) faults within the study area, no restriction on the location of refuse placement is required according to Subchapter 15. While strong ground motion can be expected from seismic events in the Southern California area, all structures and remedial control facilities will be designed and built to withstand the MPE.

In order to reduce the potential for slope instability caused by cover soil excavations, specific guidelines have been developed for cut slopes. In areas where joints or fractures are not undercut, slopes as steep as 1:2 (horizontal to vertical) could be excavated. In areas of unfavorable foliation or fracture orientation, shallower slopes will have to be made. It should be noted that all cut slope inclinations should be considered preliminary recommendations and that additional investigations will be required to confirm these results.

Groundwater. The discussion of groundwater mitigation measures common to all landfills provides the necessary information. The reader is referred to Section 4.2.2. A comprehensive, detailed monitoring system would be approved by the RWQCB prior to placement of refuse.

Surface Water. The discussion of surface water mitigation measures in Section 4.2.2 would be similar to all sites. Precise locations of drainage structures, however, would be site-specific and would be determined prior to site development. A drainage plan, including design details, would be approved by the RWQCB prior to issuance of waste discharge requirements and placement of refuse.

Unavoidable Impacts

None. Use of specified environmental control systems together with proven landfill operational technologies would mitigate potential significant impacts to less than significant levels.

4.2.6 Cumulative Impacts

Development of the potential landfills concurrently or in combination with other reasonably foreseeable projects in the project areas would not result in any significant adverse cumulative impacts.

4.3 BIOLOGICAL RESOURCES

This section provides an evaluation of the biological resource issues associated with waste diversion and the potential landfill sites. For the assessment of landfill-related impacts, literature searches and mapping from aerial photography were supplemented with field investigations of the potential Blind, Towsley, and Mission-Rustic-Sullivan Canyons Landfill sites. The purpose of the investigations was to assess the existing biological conditions, to identify impacts associated with the implementation of the potential sites as landfills, and to recommend mitigation measures to eliminate or substantially reduce potential impacts. Details of the investigations were conducted by McClelland Consultants (West), Inc., and can be found in the technical report.

4.3.1 Waste Diversion

The waste diversion component of the Integrated Solid Waste Management System (Integrated System) may include source waste reduction, residential/commercial recycling, recycling at solid waste facilities, and composting/utilization of green waste. The biological issues associated with such activities are discussed below.

Impacts and Mitigation Measures

Impacts and mitigation measures associated with biological resources are discussed below. Because specific facility sitings are not included in this Program Environmental Impact Report (EIR), the discussion is necessarily general in nature.

Collection and Intermediate Handling. None of the waste diversion activities noted above is likely to result in significant impacts to biological resources. Waste diversion activities noted above are generally either not site specific or would be conducted at facilities already dedicated to waste management. Any new facilities that are constructed would typically be in developed areas where biological resources are of limited significance, with the exception of composting which could be conducted in undeveloped areas. Environmental reviews during facility sitings would identify any impacts and develop appropriate mitigation measures.

Ultimate Processing. No significant biological impacts are anticipated with respect to existing facilities. If new facilities are developed, impacts and mitigation measures will be identified during the environmental review process.

Unavoidable Impacts

None. Waste diversion activities are not likely to significantly impact biological resources. Any new facility sitings would be subject to environmental review where site specific impacts would be identified and mitigation measures developed if necessary.

4.3.2 Issues Common To All Landfills

Issues common to all landfills include the methodology for gathering needed information and for assessing impacts, the regulations which govern development activities taking place in areas containing sensitive species and/or habitat, and regional impacts on flora and fauna. Each of these items is discussed below. The term "sensitive species" is used throughout this section on biological resources. Sensitive species include plants or animals that are officially listed by a regulatory organization or agency, as well as those considered to be of local concern.

Methodology

The methodology for gathering data and for assessing impacts is discussed below. Items discussed include definition of the study area, literature search, mapping from aerial photography, and the fieldwork.

Definition of Study Area. The term "study area" refers to the actual areas included in the biological resources investigation. Areas within the access road corridors for Blind and Towsley Canyons were included in the field surveys. Because the specific alignment for the access road from Mission to Rustic-Sullivan Canyons was not available at the time, this area was not included in the field surveys; however, aerial photo interpretation of the proposed access corridor between Mission and Rustic-Sullivan Canyons was performed.

Literature Search. A literature search was conducted to determine the potential presence of sensitive species in the vicinity of each site. No published reports were identified for any of the canyons, except Mission Canyon, for which a Final EIR was prepared by the Sanitation Districts in 1980⁴. Data sources included:

- California Natural Diversity Data Base (CNDDB).
- U.C.L.A. herbarium.
- Computer searches using the University of California's on-line computer search system.

- Published and unpublished documents.
- Interviews with local experts, knowledgeable professionals, and agency officials.

Mapping from Aerial Photography. Vegetation mapping was prepared by interpreting color aerial photographs (1" : 2000' and 1" : 400') to delineate major plant communities. Community definitions used throughout this report are from the Preliminary Descriptions of the Terrestrial Natural Communities of California (Holland, 1986)¹¹¹ used by the California Natural Diversity Data Base.

Wildlife maps were prepared by identifying areas of high actual or potential value to animals. These areas were mapped on the 400-scale field maps with vegetative communities already indicated.

Wildlife mapping delineated two general categories of habitat: potential high use areas and critical habitat value areas. Potential high use areas were defined as areas used for a variety of important wildlife activities, such as nesting/denning, foraging, breeding, and migrating. Areas designated as critical habitat include potential high use areas that are scarce on a regional level. Areas of critical habitat value include all woodland and riparian habitats, as well as areas in which surface water is present.

Fieldwork. Fieldwork consisted of both plant and animal surveys as discussed below.

- **Flora.** Predictive sensitive plant surveys were conducted at each site in May 1989 to determine the presence of sensitive plants prior to withering. Detailed floristic surveys including field truthing of the vegetation maps, species inventories, riparian determinations, and significant tree surveys were then conducted at Blind, Towsley, and Rustic-Sullivan Canyons. Additional data compiled during the floristic survey included estimation of the percentage of plant cover, dominant plants in each community, habitat diversity, general community conditions, and evidence of natural or human disturbance. Additional spring surveys were conducted in Blind and Towsley Canyons in April, 1990 to augment previously conducted field studies with data obtained during optimal flowering season. The results from the 1990 spring survey are incorporated into this document.

Fauna. Site specific field work was conducted on Blind, Towsley, and Rustic-Sullivan Canyons. Fauna lists had been compiled previously for Mission Canyon.⁴ The field

investigations were conducted throughout each site to identify present and potential wildlife activity and biological value. The methodology used to compile the wildlife species lists consisted of faunal surveys in various habitats, small mammal live-trapping, and sensitive species surveys. In accordance with the Significant Ecological Area Technical Advisory Committee's (SEATAC) requirements for biota reports, specialized surveys were performed to determine the presence of certain sensitive animals. Additional surveys were conducted for raptors and butterflies by specialists in these disciplines.

Regulatory Setting

Federal, state, and Los Angeles County (County) regulations govern development activities taking place in areas containing sensitive species and/or habitat. The United States Fish and Wildlife Service (FWS) and the California Department of Fish and Game (CDF&G) have regulations that provide legal protection for rare, threatened, and endangered species of plants and animals and habitats that are unique or support sensitive species. The Endangered Species Acts of the state and federal governments are parallel documents and empower the agencies to review projects for their potential impacts to sensitive species or habitats. The County regulates development by ordinances that govern the issuance of conditional use permits in areas where sensitive species and or habitats exist.

Federal Policies. Federal policies include the Federal Endangered Species Act of 1973 and the Clean Water Act of 1977.

Protection of Endangered Species. The Federal Endangered Species Act of 1973 provides legal protection for endangered and threatened animal and plant species. The FWS has jurisdictional authority over federally listed threatened and endangered species.

Protection of Wetlands. Regulatory protection for water resources is under the jurisdiction of the U.S. Army Corps of Engineers. Section 404 of the Clean Water Act prohibits the discharge of dredged or fill material into waters of the United States without a permit from the Corps. Delineation of wetlands is required to determine acreages affected by dredging and filling operations. Impacts to wetlands biological resources are assessed by the FWS. Policies concerning loss of wetlands generally stress a water-dependent use and the need to compensate for wetlands lost by creating wetlands from nonwetland habitat on at least an acre-for-acre basis.

State Policies. The State of California has enacted laws that parallel federal legislation protecting endangered, rare, and sensitive species. These regulations are summarized below.

Protection of Endangered Species. The California Endangered Species Act of 1984 (renewed 1988) and the California Native Plant Protection Act of 1977 regulate the listing and potential taking of endangered, threatened, and rare plants and animals within the state. ("Taking" includes harassment, disturbance to critical habitat, and direct capture or mortality.) Species listed by the state are not necessarily protected by the federal protection agencies. The CDF&G is empowered to review projects for their potential impacts to listed species and their habitats. Also administered by the CDF&G are Species of Special Concern. These species are not legally protected, although the list is used as a planning tool and often includes candidate species.

Protection of Wetland Habitat. Wetland protection policies within the state are defined by the CDF&G. A Stream or Lake Alteration Agreement (Fish and Game Code Section 1601/1603) must be approved if a proposed project includes activities that will change the natural state of any river, stream, or lake in California. Chapter 6 of the Code prohibits substantial diversion or obstruction (i.e., sedimentation) of drainages designated by CDF&G without prior notification. Designated drainages include all blue line water courses as shown on USGS topographic quadrangle maps and jurisdictional wetlands as defined in the Federal Manual for Identifying and Delineating Jurisdictional Wetlands (1989). The CDF&G evaluates applications based upon the anticipated impact of the proposed project on fish and wildlife resources. The final agreement may include modifications of the initial proposal and mitigation measures developed to protect or restore those resources.

Special Interest Species. In addition to the official listing of species, by FWS or CDF&G as threatened, endangered, or rare, several other classification systems are used to indicate the relative sensitivity of an organism. These include candidate species and species of special concern, the Audubon Society Blue List, and the Native Plant Society's "Inventory of Rare and Endangered Vascular Plants of California." (A complete listing of species on these lists is found in the technical report).

Los Angeles County Policies. The County regulates development, including projects which may impact biological resources, through the Conditional Use Permit (CUP) process. Biological assessments are required when: 1) the project is

located within a Significant Ecological Area (SEA) as identified in the County's General Plan; 2) the project may (as determined by departmental staff) impact significant biological resources including rare, threatened, or endangered species, riparian habitat, oak habitat, or other large (significant) trees; and/or 3) the project is located within identified wildlife corridors in the Santa Monica Mountains. Specific ordinances have been adopted governing development within SEAs and development which may impact oak tree resources (Title 22, Ordinance No. 88-0157, Los Angeles County Code).

Significant Ecological Areas (SEAs). The designation of an SEA is based upon specific criteria which range from rare, threatened, or endangered species to areas harboring relatively undisturbed examples of the natural biotic communities of the County. Proposed development projects that are within SEAs, SEA buffer areas, or adjacent to SEAs are subject to review by the SEA Technical Advisory Committee (SEATAC) which evaluates impacts to the SEA that could occur with project implementation. The SEATAC advises the County Board of Supervisors and Planning Commission recommending approval, denial, or modifications to proposed projects.

Oak Tree Ordinance. The County Code (Title 22, Ordinance No. 88-0157, Sections 22.56.2050-2180) recognizes oak trees as significant historical, aesthetic, and ecological resources and requires permits for their removal. Additionally, the oak tree ordinance requires a survey of oak trees existing on a proposed project site and requires specific mitigation measures (i.e., replacement) to offset the impacts of trees lost due to development. This ordinance also governs the conditions which must be met to protect trees to be retained following completion of development.

Regional Biological Issues

Regional biological issues common to all potential landfill sites are discussed below. Issues specific to each landfill site are discussed in subsequent sections.

Setting. All three potential landfill sites lie within two general biographic regions; the Santa Susana Mountains (Blind and Towsley Canyons) and the Santa Monica Mountains (Mission-Rustic-Sullivan Canyons).

Santa Susana Mountains. The Santa Susanas, which include Blind and Towsley Canyons, form a segment of the Transverse Ranges and intergrade to the east with the San Gabriel Mountains. The area containing these sites supports

substantial natural biotic communities, despite the proximity of urbanization. Of special interest within SEA-20 is the diverse oak woodlands that occur, containing six different oak species. Other communities of significance are the riparian communities (southern coast live oak riparian forest and southern willow scrub). The Santa Susana Mountains are regionally important because they provide valuable wildlife migration corridors interconnecting the San Gabriel Mountains to the east and the Santa Monica Mountains to the west.

Santa Monica Mountains. The Santa Monica Mountains are part of the Transverse Ranges of Southern California. Located in the southwestern most region of these ranges, the Santa Monica Mountains are surrounded by developed areas of metropolitan Los Angeles on the east, the San Fernando/Simi Hills region to the north, the Oxnard Plain to the west, and the Pacific Ocean to the south. The Santa Monica Mountains region, where Mission-Rustic-Sullivan Canyons occur, is known for its unique regional biological values.¹¹²

Sensitive Species. The literature search identified sensitive species of flora and several sensitive species of fauna as known or likely to occur within the vicinity of each site. Tables 4.3-1 and 4.3-2 list plants and animals considered sensitive and specifically found during field work conducted for this study.

Sensitive Habitats. Sensitive habitats discussed below are those of particular importance to wildlife or which contain sensitive plant species. Habitats are considered sensitive if they have a potential for high use by wildlife, if they have legal protection, if they contain or provide habitat for sensitive species of plants or animals, or if they are scarce regionally. Woodlands and riparian habitats are two of the most sensitive communities in California due to the loss of habitat through urbanization and agricultural activities. Wildlife migration corridors are sensitive because they provide critical linkage between and through urban and natural areas. Certain plant communities were also determined to be sensitive according to the Holland (1986) classifications of communities with high inventory priorities.¹¹¹ These include valley oak woodland, California walnut woodland, sycamore alluvial woodland, and southern willow scrub.

1. Woodlands/Forests. Four types of woodland/forest habitats occur within the study areas: coast live oak woodland, valley oak woodland (savanna), California walnut woodland, and bigcone spruce canyon oak forest. Three

Table 4.3-1 Sensitive Flora of the Project Vicinity

Scientific name/common name	Status ^a	Flowering period	Found during current study	Habitat ^b
<u>Brickellia nevadensis</u> Nevin's brickellia	CNPS-4	May-October	All sites	Dry slopes and washes in coastal sage scrub and chaparral. South face of San Gabriel and Santa Monica Mountains. Found on Towsley, Rustic-Sullivan and Blind.
<u>Calochortus catalinae</u> Catalina mariposa lily	CNPS-4	March-May	Blind Canyon (off-site)	Grassy areas in heavy soils; fire follower. Occurs in grassland and chaparral from San Luis Obispo to San Diego counties. Found just off-site along the southern boundary of Blind Canyon in chaparral. Suitable habitat is present at all canyons and this plant is likely to occur.
<u>Quercus lobata</u> Valley oak	CNPS-4	March-April	Towsley Canyon	Valleys and slopes below 2,000 ft, foothill woodland. Borders inner and middle coast ranges to San Fernando Valley and San Marino, Los Angeles County. Found at Towsley Canyon.
<u>Samoliza mitchellii</u> Santa Susana tarplant	CNPS-1B	July-October	Blind Canyon (access corridor)	Rocky outcrops of Santa Susana sandstone within chaparral and chaparral and grasslands, Santa Susana Mountains. Found within access road corridor, west of Blind Canyon. Suitable habitat is not present on the other sites.

^a California Native Plant Society (CNPS) designations from "Inventory of Rare and Endangered Vascular Plants of California (Smith and Berg, Sept. 1988):

CNPS 1B = Plants rare, threatened or endangered in California and elsewhere.

CNPS-2 = Plants rare, threatened or endangered in California, but more common elsewhere.

CNPS-3 = Plants about which we need more information - a review list.

CNPS-4 = Plants of limited distribution - a watch list.

CR = California rare plant (equals federal "threatened" classification)

^b Special Interest = Considered of local interest due to uniqueness of species occurrence or threats to population and/or habitat.

^c CNDDDB, 1989; Gustafson, 1989; McAuley 1985; Munz, 1973; Prigge, 1989; Verity, 1989.

Note: Project vicinity includes Santa Susana and Santa Monica Mountains region. "Sensitive" flora includes those species listed as threatened or endangered or candidates for such listing by the CDF&G or the FWS and those species considered to be of "special interest" in the area due to their existence at the limit of or beyond their normal range or local reductions in habitat and/or population numbers.

Source: McClelland Consultants, 1990.

Table 4.3-2 Sensitive Fauna of the Project Vicinity

Scientific name/common name	Status ^a	Where found during current study	Habitat ^b
BIRDS			
<u>Cathartes aura</u> Turkey Vulture	CP, SI	All sites	Hill terrain with nearby open country for hunting. Found nesting during the survey within Blind Canyon access road corridor. Seen soaring or roosting on all sites.
<u>Vultur gryphus</u> Andean condor	SI	Towsley Canyon	Non-native species involved in the California condor recovery effort. Andean condors are involved in refining condor release techniques, studying habitat preferences, and identifying potential condor/human conflicts. Seen on high tension towers along southwest border of Towsley Canyon.
<u>Buteo jamaicensis</u> Red-tailed hawk	CP	All sites	Hill terrain with nearby open country for hunting. Found nesting during the surveys.
<u>Buteo lineatus</u> Red-shouldered hawk	CP, BL	Rustic-Sullivan Canyons	Riparian and oak woodlands, urban areas with nearby open country for hunting. Found during the surveys.
<u>Bubo virginianus</u> Great horned owl	CP	All sites	Common resident in many habitats. Found nesting during the surveys.
<u>Otus kennicottii</u> Western screech-owl	CP	Rustic-Sullivan Towsley Canyons	Common resident in open woodlands and streamside groves. Found nesting during the surveys.
<u>Progne subis</u> Purple martin	CSC, BL, SI	Towsley Canyon	Uncommon visitor in woodlands, often near water. Serious reduction in southern California breeding population. Found during survey.
<u>Lanius ludovicianus</u> Loggerhead shrike	FC2, BL	Blind Canyon	Open country, grassland and savannah with scattered bushes. Found during survey.
<u>Ammodramus savannarum</u> Grasshopper sparrow	BL	Towsley Canyon	Pastures, grasslands, old fields. Found during the survey.
<u>Falco sparverius</u> American kestrel	CP	All sites	Canyon resident in many habitats including urban areas. Found during the survey.
MAMMALS			
<u>Felis concolor</u> Mountain lion	SI	All sites	Rocky habitats for denning; may occur in most habitats. Found during the survey.
<u>Lynx rufus</u> Bobcat	SI	Rustic-Sullivan; Towsley Canyons	Range includes most habitats. Found during the survey.
<u>Taxidea taxus</u> Badger	CSC	Towsley Canyon	Grasslands; open range areas. Found during the survey.
<u>Dipodomys agilis</u> Pacific Kangaroo rat	SI	All sites	Gravelly or sandy soil, slopes or washes, open chaparral. Found during the survey.

Table 4.3-2 Sensitive Fauna of the Project Vicinity (continued)

Scientific name/common name	Status ^a	Where found during current study	Habitat ^b
REPTILES			
<u>Phrynosoma coronatum</u> <u>blainvilliei</u> San Diego horned lizard	CSC, FC2	Towsley Canyon	Brushlands, coniferous forests, and broadleaf woodlands. Requires fine loose soil, and open areas with scattered brush. Found during survey.
BUTTERFLIES			
<u>Pontia protodice</u> Common white	SI	All sites	Throughout, mustard family (Brassicaceae).
<u>Pontia sisymbrii s.</u> California white	SI	All sites	Chaparral, throughout, mustard family (Brassicaceae).
<u>Colias harfordii h.</u> Harford's sulfur	SI	All sites	Chaparral, pea family (Astragalus, Lotus)
<u>Danaus plexippus</u> Monarch	SI	All sites	All habitats, milkweed (Asclepias)
<u>Chlosyne gabbii g.</u> Gabb's checkerspot	SI	Rustic-Sullivan Canyons	Chaparral, Plantain family (Plantaginaceae), Honeysuckle family (Caprifoliaceae)
<u>Satyrium auretorum spadix</u> Nut-brown hairstreak	SI	All sites	Chaparral, oak (Quercus)

^a Sources: 1980 Catalog of Special Animals and 1989 CDF&G (1989), List of State and Federal Endangered and Threatened Animals of California.

FE = Listed as endangered by the federal government.

CE = Listed as endangered by the State of California.

CT = Listed as threatened by the State of California.

CSC = Department of Fish and game Species of Special Concern.

CP = California fully protected (CDF&G) (includes all raptors).

CCE = Federal Sensitive Species (Bureau of Land Management; U.S. Forest Service).

FC2 = Federal Candidate Species, Category 2.

BL = Audubon Society Blue List (Tate, 1986).

SI = Special Interest = considered of local interest due to uniqueness of species occurrence and/or concern over low of habitat. (Information not from CDF&G).

^b CNDDB, 1989; Garrett, 1989; Ingles, 1965; Stebbins, 1966; Burt and Grossenheider, 1976; National Park Service, 1982; Wallace, 1989; Williams, 1986.

^c The monarch butterfly is listed in the 1989 CDF&G Special Animals list, without a specific status. All of the butterflies listed above are considered of local concern (Rattonil, 1989).

Note: "Project Vicinity" includes Santa Susana and Santa Monica Mountains region. "Sensitive" fauna includes those species listed as threatened or endangered or candidates for such listing by the California Department of Fish and game or the U.S. Fish and Wildlife Service and those species considered to be of "Special Interest" in the area due to local concern.

major factors contribute to the sensitivity of woodland habitats: high value to wildlife, habitat, and poor regeneration rates. Well-developed woodlands that have not been grazed by livestock provide a complex habitat for numerous species of birds, insects, mammals, and reptiles. Woodlands provide wildlife with cover, nesting/ denning sites, food, and shade.

2. Riparian/Wetland Habitats. Riparian habitats are streamside communities that develop in and around drainages with at least intermittent waterflow. Wetlands occur within riparian habitats areas where surface waters or saturated soils occur for periods long enough to support facultative and/or hydric plant species. Sensitive riparian/wetland habitats that occur within the study areas are sycamore alluvial woodland, southern coast live oak riparian forest, and southern willow scrub. Riparian/wetland habitats are very important to wildlife, and a well-developed riparian thicket or woodland may support a variety and abundance of wildlife. These habitats are priority communities for protection under state, federal, and local policies.

3. Migration Pathways. The movement of wildlife within regions consists of both regional migration routes and areas of daily or seasonal use by animals. Large-scale migration routes link areas where populations exist on a permanent or semipermanent basis. The movement of animals through these corridors allows for replenishment of populations which decline from low birth rates, disease, or predation and for the maintenance of genetic diversity, enabling species to adapt to an ever-changing environment. These "corridors" are not confined to specific definable pathways, although areas of contiguous, suitable habitat are most heavily utilized. In southern California, the regional movement of animals is funneled through constricted areas such as river, creek, and street underpasses. These constricted areas are considered "choke points" and are critical to the overall ability of animals to migrate regionally for purposes of foraging and breeding. Figure 4.3-1 illustrates the concept of regional wildlife movement corridors, as well as specific "choke points" that restrict movement. In contrast, local areas of movement represent zones linking areas of daily or seasonal use by local and subregional animal populations. Riparian woodlands, drainage courses, and ridgelines are examples of linkages through which animals can travel between foraging and denning or resting places. In addition, water is a critical resource for many animals, and the routes of daily movement generally include a stop at a permanent source of water.

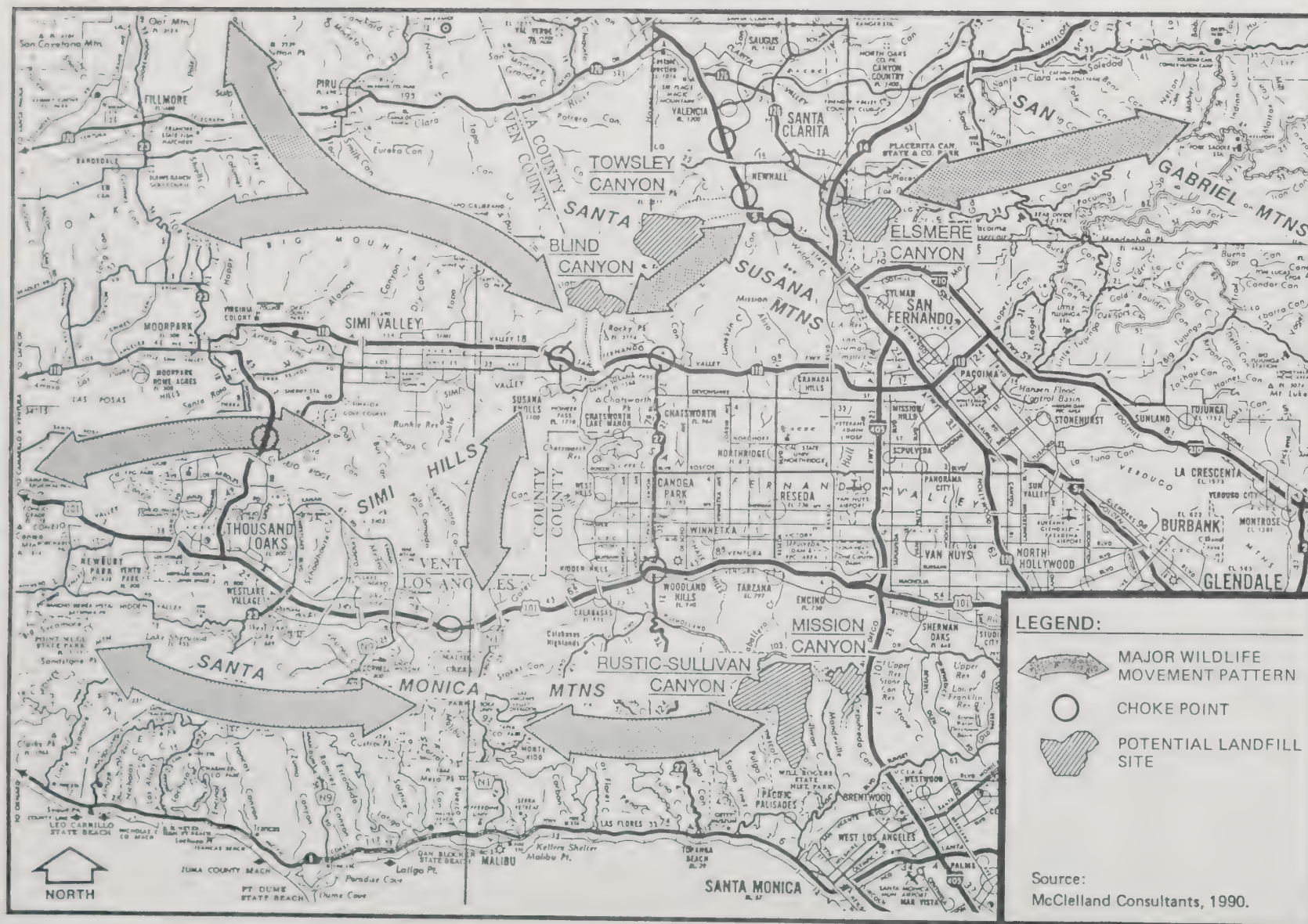


Figure 4.3-1 Major Regional Wildlife Movement Patterns

4. Foraging Habitats. Grasslands provide important foraging habitat used by a variety of wildlife species. Many raptors including hawks, kites, and kestrels hunt throughout this habitat. Other sensitive bird species including the loggerhead shrike and grasshopper sparrow are found in grasslands. Mammals also utilize this habitat. Badgers forage for gophers and other rodents as well as establishing dens.

5. Rock Outcrops. Rock outcrops and ledges are important to raptors (birds of prey) among other birds, ringtail (raccoon relative), and reptiles for hiding, nesting, and denning habitat. These outcrops also provide for thermal lift, which is important to large raptors for soaring. Mountain lion, bobcat, and fox may also use caves and ledges within the rocks for nesting and denning.

Impacts and Mitigation Measures. Relative biological sensitivity specific to each of the proposed sites was assessed on the basis of several biological criteria, including the diversity, abundance, and health of native plant species, plant communities, wildlife species and habitats, and the presence of species or habitats considered threatened, rare, endangered, or sensitive. Also considered was the potential and actual use of the areas within each site essential to the maintenance of wildlife populations (i.e., breeding/nesting sites, surface water resources, wildlife migration pathways, high value foraging areas, etc.) and the degree of habitat disturbance and general community health.

In order to assess the potential impacts and appropriate mitigation measures, the phased development of the potential landfill sites was considered. The landfill area would be prepared, filled, and restored in phases. After each phase is completed and closed, restoration/revegetation would begin on that portion of the site, while the next phase is under development. The effect of this method would be the ongoing, sequential revegetation of each phase, resulting in a variety of age classes and maturity of the replanted habitats. This approach would greatly reduce the significance level of several impacts, particularly those affecting wildlife, because substantial portions of the fill area would remain undisturbed and new habitats would be replaced continuously throughout the life of the landfill.

The closed fill areas would be covered with sufficient topsoil to allow revegetation to occur on top of the closed fill. The depth of this material would be sufficient to prevent the roots of all plant materials (particularly trees) from breaking through the low permeability cap. All plant communities, except riparian communities, are considered to be

eligible for revegetation on the closed fill areas. Specific species and data regarding how much soil would be appropriate for each species would be determined and presented in site specific closure plans.

Many of the mitigation measures entail the recreation of natural habitat and the restoration/enhancement of disturbed habitat. These measures require long-term maintenance and monitoring programs to determine the success of the effort and to provide guidelines for appropriate remedial action if the measure fails. Such a mitigation monitoring program is required by Section 21081.6 of the Public Resources Code and would be implemented at all sites pursued.

Flora. Development of any of the potential landfill sites would result in the direct removal of native and nonnative vegetation. The specific acreage of these impacts is found under the discussion of the individual sites.

Mitigation measures for vegetation would involve restoration of areas disturbed by the proposed action, measures to replace habitat which is permanently lost, or the enhancement of existing, degraded areas. For this study, a ratio of 3:1 was used to calculate riparian and rare plant restoration acreage and the number of trees to be replaced in each habitat for mitigation.

Indirect impacts that could occur at each of the potential sites involve the potential degradation of vegetation left intact but bordering the active fill area and access road. Where construction, grading, and landfill operations take place, drainage patterns would be permanently changed. Large areas of impervious surfaces would be created, and shadows as well as subtle alterations to surface wind patterns could occur. The potential significance level of these impacts would depend on the specific vegetation types being affected.

To minimize indirect impacts to adjacent sensitive trees (oaks, sycamores, bigcone spruce) outside of the fill and access road areas, the following measures would be taken. Existing conditions would remain undisturbed within a 6-foot radius of the tree canopies, and equipment or vehicles would remain outside this area. Flags and fencing would be used to delineate this avoidance area. Surface water runoff would be diverted away from tree trunk areas, and ponding would not be allowed to occur in the dripline.

Mitigation associated with changes in surface and subsurface water flow would include design of runoff

detention basins to enable a gradual release of seasonal water, providing a source of surface water for wildlife and providing flow to downstream riparian areas.

Another indirect impact to each site's native vegetation could be the introduction, through landscaping, of various invasive, nonnative (introduced exotic/ornamental) plant species. Transported vegetation trimmings could also provide a source of invasive exotic species. Many exotic species have the ability to competitively exclude native species. Over time, this could result in the loss of native plants as the introduced species invade surrounding natural areas. The significance level of these impacts could range from insignificant to significant, depending on the type of landscape plants to be used, their placement relative to native habitats, and the relative value of the affected vegetation.

Feasible mitigation measures are available to reduce these impacts to acceptable levels through careful selection and placement of landscaping materials. Emphasis would be placed on the use of native plants endemic to the study area (versus native to other parts of the state). To avoid adverse impacts caused by transported cuttings en route to the landfill, all loads would be required to be covered.

Short-term construction activities and long-term operations could create dust from construction equipment, grading to obtain cover soil, truck traffic, and landfilling activities. Dust buildup on vegetation adjacent to the landfill and access road would interfere with gas exchange and light energy entering leaf surfaces, resulting in reduction of photosynthesis, loss of plant vigor, and possibly dieback of plants.

This indirect impact would be mitigated by regular rinsing of vegetation adjacent to the active fill area and access road. Plants would be lightly sprayed with clean water at regular intervals to remove dust buildup. This measure would effectively reduce the potential adverse impacts to vegetation to less than significant.

Fauna. Landfill development would result in the staged removal of all wildlife habitat within the active portion of the fill area and access road, causing an immediate reduction in the populations of wildlife within each site. This loss of habitat within the proposed fill area of each site would be an adverse unavoidable impact to wildlife. However, the significance of the impact would depend on the amount and quality of the habitat removed as compared to remaining undisturbed habitats and is discussed under the

specific impacts for each site, as well as mitigation techniques. Habitats of greatest wildlife sensitivity are woodlands (arboreal habitats), surface water resources, riparian communities, and wildlife movement corridors which encompass many plant associations. These habitats are high in wildlife value and are both locally and regionally limited in distribution.

Grasslands, whether composed of native or nonnative plants, provide important denning, hunting, and foraging habitat. The loss of grassland communities within the landfill area of each site would be insignificant by itself, but would contribute to long-term regional incremental degradation of overall wildlife habitat values. This habitat would be restored in the closed fill utilizing appropriate local perennial grass species, thereby reducing impacts to less than significant in the long term.

The loss of numerous mature trees and woodland habitat within the fill area of each site and access road would adversely impact wildlife by the long-term removal of important arboreal habitat. These impacts would be mitigated to less than significant through sequential revegetation of trees on a 3:1 basis on the closed fill areas and/or adjacent areas.

Habitat destruction directly impacts animals requiring them to leave or avoid disturbed areas. This would indirectly impact populations outside the disturbed areas because the emigrating animals would move to adjacent areas of similar habitat, which may already be at or near carrying capacity for that species. Resultant overcrowding could introduce additional stress to the local population, a factor that becomes critical in populations under existing stresses for survival, such as those with low population numbers or unique habitat requirements.

Several butterfly and other insect species have relatively low mobility, and each major canyon may have its own subspecies (or phenotype) adapted to the specific microhabitat conditions of that location. Major land use alterations, such as landfilling, may result in the local extinction of these phenotypes. This loss of genetic variability can decrease the ability of a butterfly species to survive long-term climatic and vegetation changes.

The removal of habitats within the proposed fill boundaries and access roads could result in the loss of local and regional wildlife corridors (movement areas) during the operational life of the landfill. These losses would be unavoidable and significant because they could not

be mitigated on the landfill during the operating life of the site. However, these losses would not necessarily be permanent due to the revegetation program ongoing over the life of the landfill. To offset the losses of habitat and wildlife corridors during the operating period, both the completed landfill surfaces and access road areas would be enhanced to increase habitat values for use as a wildlife corridor. Methods of enhancement include revegetating with plant species that provide food and/or cover; providing permanent year-round surface water stations (guzzlers) to attract animals to the movement area; providing buffers of native vegetation between restored/enhanced areas and fill areas on access corridors; and prohibiting activities that could adversely impact the use of these areas as wildlife corridors, such as livestock grazing, off-road vehicle use, or other intensive human activity. These mitigation measures would reduce, but not eliminate, the adverse impacts. The remaining impact could continue to be significant depending on the effectiveness of implemented mitigation measures.

Movement patterns adjacent to the fill boundaries could be disrupted or rendered useless depending on the proximity to active fill areas and topographic features between the movement corridor and fill areas that could provide natural buffer zones. The loss of these corridors could cause groups of animals to be isolated from the remainder of their populations, creating limited gene pools which would lead to inbreeding. The ultimate result of inbreeding in isolated populations is extinction. Dense vegetation, hills, or berms could serve as site and sound blockades to reduce impacts caused by landfilling activities. It should be noted that, in the long term, given the rate of development within the County, the potential landfill sites, when closed, could be an important remaining open space and opportunity for wildlife movement.

Clearing and grading in preparation for the potential landfill activities and access road construction could result in the unavoidable loss of many fossorial and less mobile animals. To reduce this impact, clearing and grading of the site would be staged to permit mobile terrestrial animals access to undeveloped areas and would not create islands of vegetation cut off from neighboring habitats. To further reduce impacts, these activities would take place after the majority of nesting and denning has been completed and migratory species have left the area. These mitigations would reduce the impact to less than significant.

The increase in human and equipment activity could cause many species to abandon the construction and landfill area, either permanently or until landfilling and restoration of disturbed areas was completed. This would cause a temporary increase in certain off-site wildlife populations, which could result in overcrowding and increased mortality as discussed above.

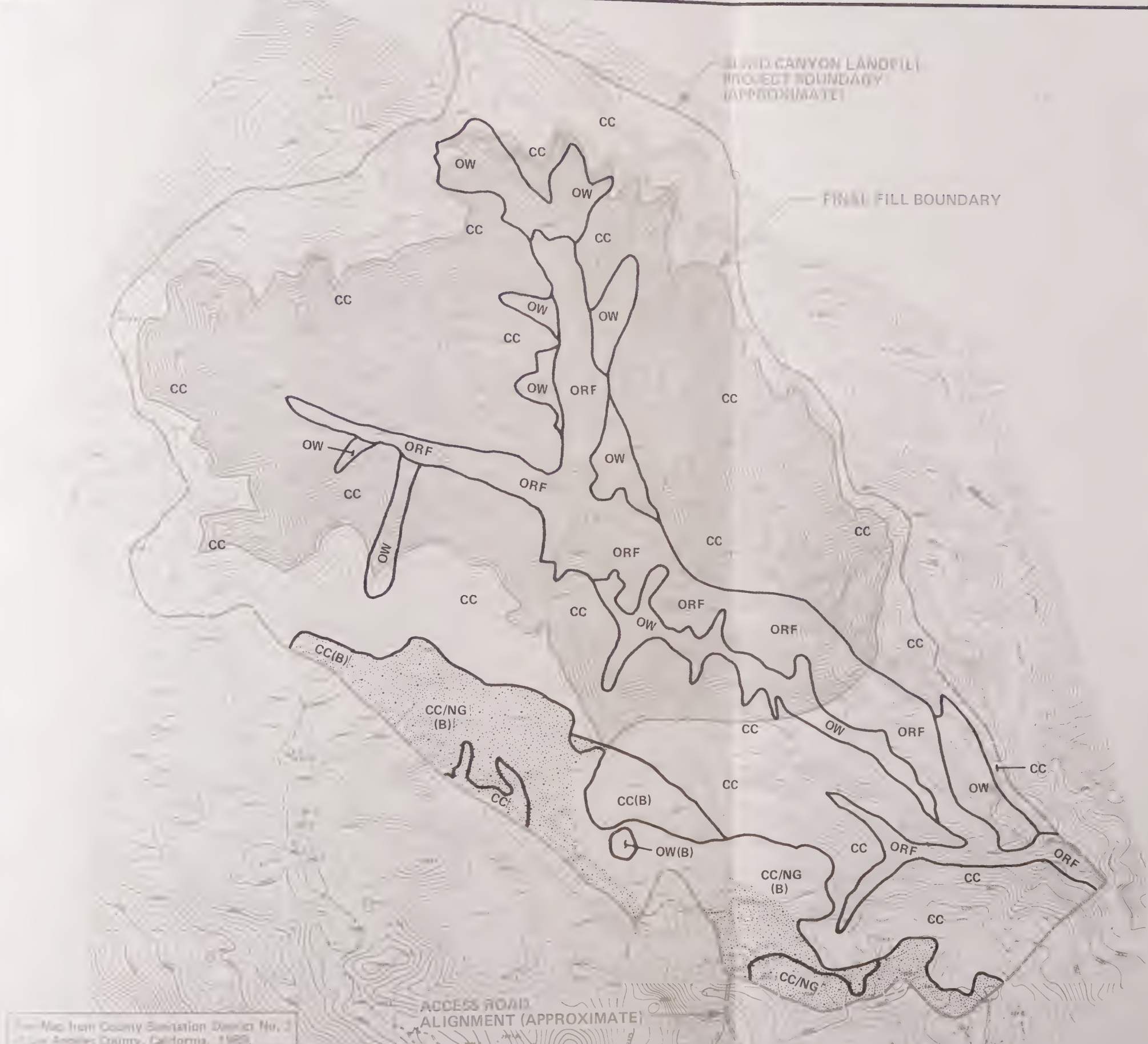
Although landfill operations would be restricted to 11 hours (6:00 a.m. to 5:00 p.m.), some night lighting would be required to illuminate the active fill area, offices, and the access road, as well as some security lighting. Night lighting could cause adverse impacts to animals in adjacent areas by disrupting behaviors influenced by light and dark periods, such as the initiation or cessation of reproductive or daily activities. Night lighting would also adversely impact nocturnal animals by reducing their ability to avoid predators. Wildlife would either habituate to these constant light sources or avoid the impacted area. Beneficial impacts of night lighting would exist for nocturnal insectivore. Landfill lighting would be designed and positioned to illuminate operating areas. The use of amber colored lighting would lessen impacts to butterflies and other animals by reducing the attraction of these animals to the lights. These measures would reduce impacts to less than significant levels.

4.3.3 Blind Canyon

Setting

The site-specific setting of the potential Blind Canyon Landfill site is discussed below. Floral and faunal characteristics are reviewed.


Flora. The four major plant communities of Blind Canyon are chamise chaparral, southern coast live oak riparian forest, coast live oak woodland, and nonnative grassland. Several subcommunities occur, including California walnut woodland, southern willow scrub, and mulefat scrub. A burned chamise chaparral community occurs within the northeast portion of the access road corridor and southeast of the study area. The vegetation maps for the Blind Canyon landfill site and access road are presented in Figures 4.3-2 and 4.3-3. Figure 4.3-3 also shows the proposed fill design. Table 4.3-3 summarizes acreage and total tree counts by community for the study area and access road corridor. Additional acreage west of the study area would be available for potential mitigation area or preserved open space (see Figure 3-11). However, since there would be no impacts to this area related to landfill operation



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(APPROXIMATE)

LEGEND:

VEGETATION COMMUNITIES

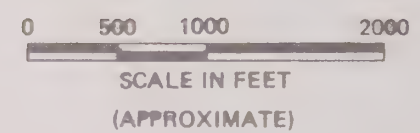
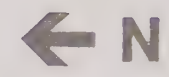
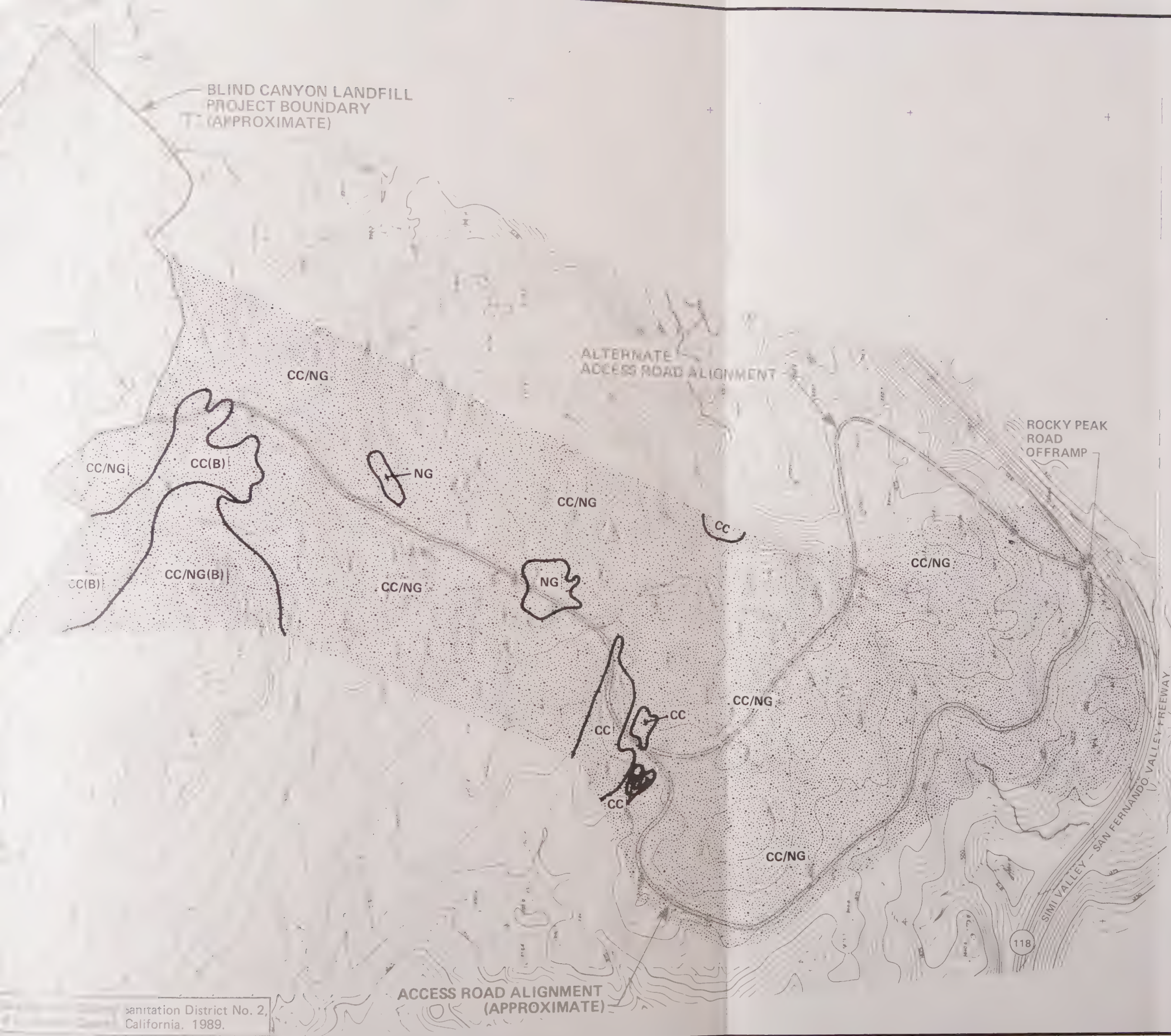
-  *Hemizonia Minthornii* (sensitive species)
- OW** Coast Live Oak Woodland
- NG** Non-Native Grassland
- ORF** Southern Coast Live Oak Riparian Forest (contains some Wetland Areas)
- CC** Chamise Chaparral
- (B)** Burn Area

NOTE:

-  FILL AREA


Source: McClelland Consultants, 1989.

Figure 4.3-2 Blind Canyon Landfill Vegetation Communities



LEGEND:

VEGETATION COMMUNITIES

-  Hemizonia Minthornii (sensitive species)
- NG** Non-native Grassland
- CC** Chamise Chaparral
- (B)** Burn Area

Source: McClelland Consultants, October 1989.

**Figure 4.3-3 Blind Canyon Landfill
Access Road Alignment
Vegetation Communities**

Table 4.3-3 Blind Canyon Acreage and Sensitive Tree Count
For Study Area and Access Corridor

Plant community	Study area acreage	Access corridor acreage ^a	Sensitive tree count/ study area	Sensitive tree count/ access corridor
Chamise chaparral	633	113	0	0
Southern coast live oak riparian forest ^c	123	0	1065	0
Coast live oak woodland	111	0	266	0
Nonnative grassland	0 ^b	7	0	0
Nonnative grassland/ chamise chaparral	<u>142</u>	<u>706</u>	<u>0</u>	<u>0</u>
Total	1009	826	1331	0

^aThe actual access road alignment would impact only a small portion of the access corridor area.

^bActual acreage not calculated due to occurrence in other communities.

^cApproximately 20 acres of jurisdictional wetlands occur within this community.

Source: McClelland Consultants, 1990.

activity, this area was not included in the biological resources study. The communities shown on Figures 4.3-2 and 4.3-3 are based on actual field observations.

The following discussion presents a brief summary of the settings of each of the communities listed on Table 4.3-3. A list of the species typically found within each of these communities is presented on Table 4.3-4.

Chamise Chaparral. Chamise chaparral (Adenostoma fasciculatum) is found throughout the study area, primarily on north and south facing slopes above the canyon bottom. The south and southwesterly facing slopes are less dense with more understory species of nonnative grasses. The north slopes are a dense chamise chaparral with very little understory. The chamise chaparral community also intergrades with coast live oak woodland at the canyon bottom along side drainages and with nonnative grasslands.

Southern Coast Live Oak Riparian Forest. The southern coast live oak riparian forest is dominated by coast live oak (Quercus agrifolia) and has a thick understory. At the southeast end of the canyon, species diversity and overall habitat quality has been reduced by livestock trampling and loafing where cattle have sought shady areas. Further northwest along the canyon, where livestock grazing is less evident, species diversity and habitat quality is higher. The southern coast live oak riparian forest community intergrades with coast live oak woodland and chamise chaparral on both sides of the canyon bottom, extending up the slopes approximately 50 to 100 feet vertically. Two riparian subcommunities occur within this habitat: mulefat scrub and southern willow scrub. These two subcommunities are found at the southeast end of the canyon and are less dominant up the canyon where they are replaced by southern coast live oak riparian forest. Both of these subcommunities are maintained by seasonal runoff from rainfall.

Coast Live Oak Woodland. The coast live oak woodland is found in the canyon bottom along the banks and side drainages of the study area, upslope of the southern coast live oak riparian forest. This community is found on north facing slopes and flatter areas within the canyon and does not occur in the access road corridor. The dominant species is coast live oak (Quercus agrifolia). Livestock grazing and trampling has degraded the habitat along the north and northeasterly boundary of the study area. Typical understory species are sparse in this area, and the ground cover is composed primarily of nonnative grasses. Plant diversity and abundance is greater closer to the

Table 4.3-4 Blind Canyon Flora Communities, Subcommunities, and Dominant Species Observed During Field Survey

Chamise chaparral
Chamise (<u>Adenostoma fasciculatum</u>)
Hoaryleaf ceanothus (<u>Ceanothus crassifolius</u>)
Ridgut brome (<u>Bromus diandrus</u>)
Soft chess (<u>Bromus mollis</u>)
Giant rye (<u>Elymus condensatus</u>)
Purple needlegrass (<u>Stipa pulchra</u>)
Southern coast live oak riparian forest
Coast live oak (<u>Quercus agrifolia</u>)
Cattail (<u>Typha domingensis</u>)
Rush (<u>Juncus textilis</u>)
Mulefat Scrub
Mulefat (<u>Baccharis viminea</u>)
Southern Willow Scrub
Arroyo willow (<u>Salix lasiolepis</u>)
Black willow (<u>Salix laevigata</u>)
Coast live oak woodland
Coast live oak (<u>Quercus agrifolia</u>)
California walnut (<u>Juglans californica</u>)
Sugar bush (<u>Rhus ovata</u>)
Nonnative grassland
California brome (<u>Bromus carinatus</u>)
Ripgut brome (<u>Bromus diandrus</u>)
Native grasses
Beardless wildrye (<u>Elymus triticoides</u>)
Needlegrass (<u>Stipa lepidota</u>)
Purple needlegrass (<u>Stipa pulchra</u>)
Crested stipa (<u>Stipa coronata</u>)
Small-flowered melic (<u>Melica imperfecta</u>)

Source: McClelland Consultants, 1990.

canyon bottom. A small portion of this community in the southeast portion of the study area is within a recently burned area. About 20 burnt oaks are present, with characteristic fire-following annual species forming the understory. A subcommunity of California walnut woodland occurs in pockets on north facing slopes within this community.

Nonnative Grassland. Nonnative grasslands occur throughout the study area and access road corridor, primarily within other communities (see Figures 4.3-2 and 4.3-3), but also as a separate community. (Acreages within the study area could not be calculated due to the occurrence of this community with other communities). Low levels of grazing are evident, but do not appear to be recent. This community also displays a ruderal component. Ruderal species are generally weedy, nonnative plants that survive in frequently disturbed areas. Native grasses occur in pockets within the nonnative community, typically in openings in the chamise chaparral.

Sensitive Communities and Plants. Sensitive communities occurring in the Blind Canyon study area include woodlands and riparian habitats; coast live oak woodland, California walnut woodland, southern coast live oak riparian forest, southern willow scrub, and mulefat scrub. The scrub habitats occur as subcommunities within the southern coast live oak riparian forest. The riparian habitat ranges from approximately 200 to 400 feet wide at the canyon bottom and narrower in the side drainages.

Two sensitive plant species were found in the study area. Nevin's brickellbush (Brickellia nevinii CNPS List 4) was found along the northeast perimeter of the study area near roadways and disturbed areas. Santa Susana tarplant (Hemizonia minthornii), a state listed rare plant, was found along the southern boundary of the study area and abundantly within the access road corridor.

Wetlands. Approximately 20 areas of jurisdictional wetlands were identified within the Blind Canyon study area. Wetland areas occur within the southern coast live oak riparian community and within the mulefat scrub and southern willow scrub habitats (which occur as subcommunities within portions of the southern coast live oak riparian forest).

As indicated on Table 4.3-3, trees found in the study area occur in two plant communities: the southern coast live oak riparian forest which contains approximately 1,002 oak trees and 63 western sycamores; and the coast live oak

woodland which contains approximately 266 coast live oak trees. Only the oak trees are subject to the Los Angeles County Oak Tree Ordinance. No trees within the access road corridor are subject to the ordinance.

Fauna. Fauna observed during field surveys included mammals, birds, amphibians and reptiles, and butterflies. Each of these is discussed below along with a review of the sensitive wildlife and habitats encountered within the study area.

Mammals. Habitat conditions within the study area are of high value for small mammal use. The drainages and slopes of this canyon provide numerous ecotones with many levels of habitat stratification. This type of setting provides quality habitat for small mammals because of the diversity of sites suitable for denning, nesting, and foraging. Table 4.3-5 lists small mammals seen during field surveys of the Blind Canyon study area.

**Table 4.3-5 Blind Canyon Mammals Observed
During Field Survey**

Mule deer (male and female)
California ground squirrel
Merriam's chipmunk
Dusky-footed woodrat
Desert cottontail
Brush mouse
California pocket mouse
Pacific kangaroo rat
Deer mouse
Coyote
Grey fox
Striped skunk

Source: McClelland Consultants, 1990

Both male and female mule deer were present in the chamise chaparral community within the site and access road corridor. Suitable foraging habitat is present for mule deer throughout the study area and access road corridor. Mountain lion activity was recorded within the boundaries of the study area. Rock outcrops, particularly those in the access road corridor, provide suitable mountain lion habitat for dens and resting/observation areas. Tracks in the sand along the western border and the remains of a deer

carcass indicated that a mountain lion uses the vicinity as a hunting ground. Other carnivorous mammals seen within the study area include coyote, grey fox, and striped skunk. Evidence of these animals, as well as mountain lion and deer, was recorded along the ridges and within the canyon bottom. Although bobcat and badger were not observed during the field surveys, suitable habitat exists within the study area.

Birds. Birds seen during the Blind Canyon survey were those common within the southern California canyons¹¹³. A list of these birds is found on Table 4.3-6. Overall quality of habitat for birds is high because of the presence of a variety of habitats, each providing diverse vegetation and topographic features to create numerous niches for nesting, foraging, and movement. Many vertical habitats are present within the study area. Hunting habitat for raptors is limited in Blind Canyon since it is composed primarily of dense chaparral and oak woodland communities. Because the small animals that live in impenetrable chaparral are not vulnerable to avian predation, this habitat does not provide much forage. Within the access road corridor, foraging habitat is available in the burnt chaparral/nonnative grassland habitats. The ridges of Blind Canyon promote soaring conditions and provide some of the better hunting habitat within the area.

Amphibians and Reptiles. Suitable habitat exists for a range of amphibians and reptiles. The most common lizards found within the study area during the survey period were the western fence lizard and side-blotched lizards. Suitable habitat exists in the access road alignment for coast horned lizard (a sensitive species), but none were found. The only snake encountered during the survey was a western rattlesnake in the burnt chamise chaparral community within the access road corridor.

Butterflies. Overall habitat conditions within the study area of Blind Canyon are of high value for butterfly use. The presence of numerous types of larval food plants creates suitable conditions for a wide variety of butterflies to breed within the study area. The vegetative communities of Blind Canyon provide a supply of flower nectar to attract and feed many species of adult butterflies. Despite this, only a small number of the expected species were identified during the field survey. This may have been due to the ongoing drought conditions, high temperatures, and midsummer timing of the survey.

Sensitive Wildlife and Habitats. Both sensitive species and sensitive habitats for fauna were found within the

Table 4.3-6 List of Birds Observed in Blind Canyon

Common name	Scientific name
Turkey vulture ^a	<i>Cathartes aura</i>
Cooper's hawk ^a	<i>Accipiter cooperii</i>
Red-tailed hawk ^a	<i>Buteo jamaicensis</i>
American kestrel ^a	<i>Falco sparverius</i>
California quail	<i>Callipepla californica</i>
Mourning dove	<i>Zenaida macroura</i>
Great horned owl ^a	<i>Bubo virginianus</i>
White-throated swift	<i>Aeronautes saxatalis</i>
Costa's hummingbird	<i>Calypte costae</i>
Anna's hummingbird	<i>Calypte anna</i>
Northern flicker	<i>Colaptes auratus</i>
Acorn woodpecker	<i>Melanerpes formicivorus</i>
Downy woodpecker	<i>Picoides pubescens</i>
Western kingbird	<i>Tyrannus verticalis</i>
Ash-throated flycatcher	<i>Myiarchus cinerascens</i>
Western wood-pewee	<i>Contopus sordidulus</i>
Cliff swallow	<i>Hirundo pyrrhonota</i>
Scrub jay	<i>Aphelocoma coerulescens</i>
Wrentit	<i>Chamaea fasciata</i>
Plain titmouse	<i>Parus inornatus</i>
Bushtit	<i>Psaltiriparus minimus</i>
House wren	<i>Troglodytes aeodon</i>
Bewick's wren	<i>Thryomanes bewickii</i>
Canyon wren	<i>Catherpes mexicanus</i>
Hermit thrush	<i>Catharus guttatus</i>
Loggerhead shrike ^a	<i>Lanius ludovicianus</i>
Phainopepla	<i>Phainopepla nitens</i>
Rufous-sided towhee	<i>Pipilo erythrophthalmus</i>
Brown towhee	<i>Pipilo fuscus</i>
Lesser goldfinch	<i>Carduelis psaltria</i>
Lawrence's goldfinch	<i>Carduelis lawrencei</i>

^aSensitive species.

Note: Species observed (or presence identified by sign) during spring/summer 1989 surveys.

Source: McClelland Consultant, 1990.

Blind Canyon study area. Figures 4.3-4 and 4.3-5 indicate the location of sensitive wildlife habitats within the landfill project boundary and access road alignment.

Raptors were observed nesting and foraging in the access road corridor and within the study area. A loggerhead shrike was found foraging in the access road corridor. Mountain lion evidence and monarch butterflies were found throughout both the access road corridor and study area.

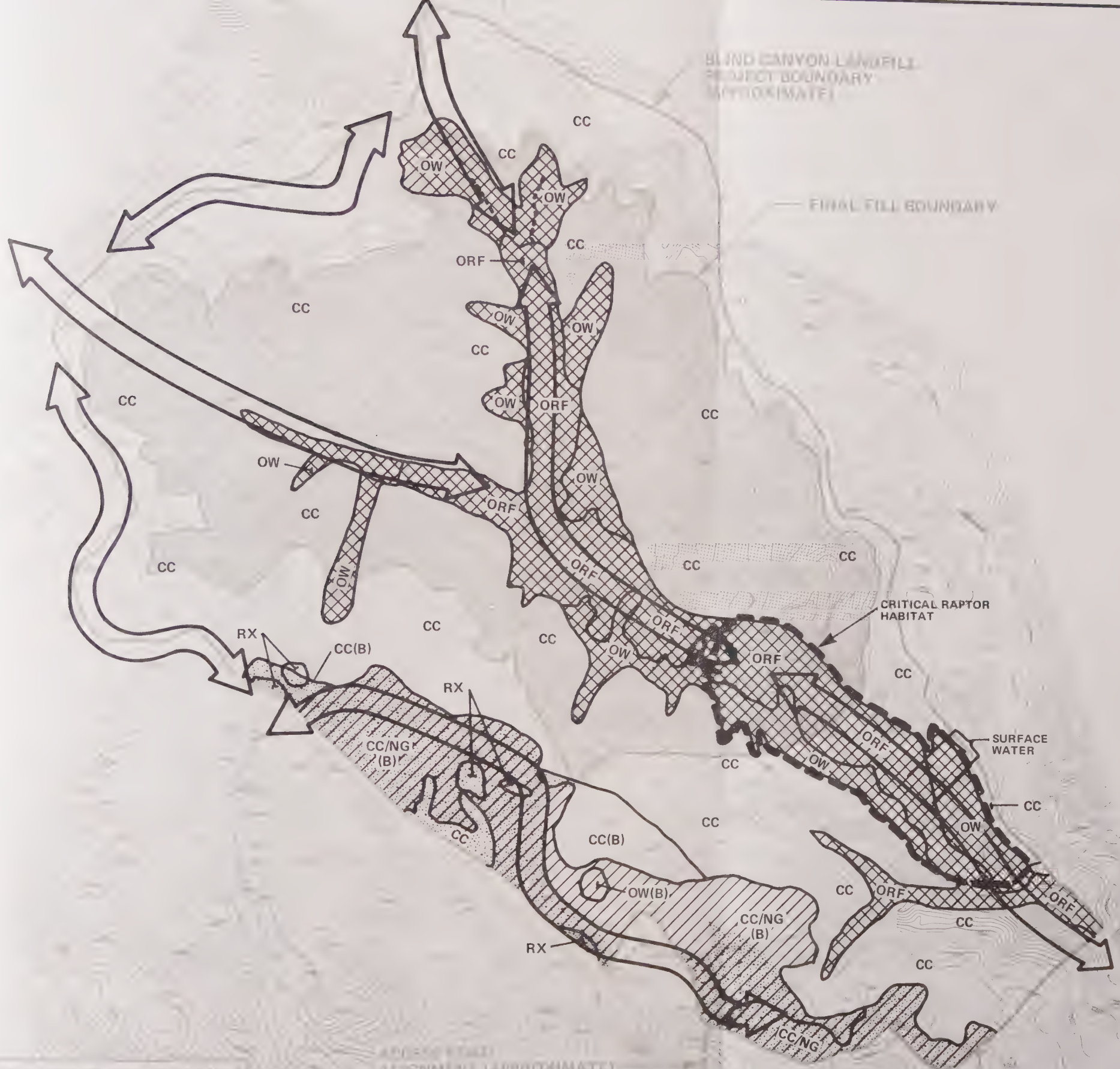
Within the study area, the coast live oak woodland and southern coast live oak riparian forest are considered critical wildlife use areas because they are scarce on a regional level, provide a variety of vertical habitats, and function as movement pathways for many animals. Within the access road corridor, foraging areas for certain raptors and suitable hunting grounds for mountain lion, bobcat and badger are found in the nonnative grassland and chamise chaparral communities. The large outcrops are designated as potential high use areas because they are suitable for nesting/denning and lookout sites for raptors, mountain lion, bobcats, and other cavity nesting species.

Impacts and Mitigation Measures

Development of Blind Canyon as a landfill could cause potential impacts to the flora and fauna of the area. These impacts and mitigation measures are described below.

Flora. The communities of greatest sensitivity within Blind Canyon are the oak woodlands (coast live oak woodland) and the riparian/wetland communities (southern coast live oak riparian forest and the subcommunities of California walnut woodland, mulefat scrub, and southern willow scrub). Table 4.3-7 presents the approximate acreage that would be potentially removed by landfill construction. To mitigate this impact, replacement area would be created in the immediate vicinity based on a restoration ratio of 3:1 for sensitive, riparian and wetland habitats and trees.



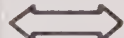
Sensitive Species. Santa Susana tarplant (*Hemizonia minthornii*), a state-listed rare plant (CNPS List 1B), was found in the chamise chaparral/nonnative grassland community within the proposed access road corridor and along the southern border of the site, outside of the proposed fill area. Construction of the access road along the alignment with the maximum potential impact would result in the direct removal of approximately 54 acres of habitat for this rare plant. The actual alignment of the




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SCALE IN FEET
(APPROXIMATE)

LEGEND:

IMPORTANT WILDLIFE HABITATS

-  Sensitive Habitat Areas
-  Potential High Wildlife Use Areas
-  Major Wildlife Movement Patterns
- RX Rock Outcrop

VEGETATION COMMUNITIES

-  *Hemizonia Minthornii* (sensitive species)
- OW Coast Live Oak Woodland
- NG Non-native Grassland
- ORF Southern Coast Live Oak Riparian Forest (contains some Wetland Areas)
- CC Chamise Chaparral
- (B) Burn Area

NOTE:

-  FILL AREA

Source: McClelland Consultants, 1989.

Figure 4.3—4 Blind Canyon Landfill
Important Wildlife Habitats


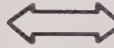
BLIND CANYON LANDFILL
PROJECT BOUNDARY
(APPROXIMATE)

ALTERNATE
ACCESS ROAD ALIGNMENT


ROCKY PEAK
ROAD
OFFRAMP

LEGEND:

IMPORTANT WILDLIFE HABITATS

-  Potential High Wildlife Use Areas
-  Major Wildlife Movement Patterns
- RX Rock Outcrop

VEGETATION COMMUNITIES

-  Hemizonia Minthornii (sensitive species)
- NG Non-native Grassland
- CC Chamise Chaparral
- (B) Burn Area

Source: McClelland Consultants, October 1989.

**Figure 4.3-5 Blind Canyon Landfill
Access Road Alignment
Important Wildlife Habitats**

ACCESS ROAD ALIGNMENT
(APPROXIMATE)

118

SIMI VALLEY - SAN FERNANDO VALLEY FREEWAY

← N

0 500 1000 2000
SCALE IN FEET
(APPROXIMATE)

Table 4.3-7 Blind Canyon Landfill Potential Impact on Sensitive Flora Acreage

Plant community ^a	Total study area acreage	Landfill impact acreage	Access road impact acreage	Total impact acreage	Restoration acreage needed ^b
Chamise chaparral	746	375	4	379	0
Southern coast live oak riparian forest ^c	123	90 ^d	0	90 ^d	270
Coast live oak woodland	111	67	0	67	134
Nonnative grassland	7	0	2	2	0
Nonnative grassland/ chamise chaparral	<u>848</u>	<u>0</u>	<u>54</u>	<u>54</u>	<u>162</u>
Total	1,835	532	60	592	566

^aSee Figures 4.3-4 and 4.3-5 for location of plant communities.

^bSensitive communities only.

^cApproximately 20 acres of jurisdictional wetlands occur within this community.

^dIncludes approximately 12 acres of jurisdictional wetlands.

Source: McClelland Consultants, 1990.

access road within the proposed access road corridor would be designed to minimize, to the extent feasible, the impact on this plant species.

Although revegetation efforts with this species are currently experimental, approximately 162 acres of replacement habitat within the project boundary would be developed. In addition, the remaining 700 acres of the project site containing this plant species would be permanently set aside for preservation. Because of the uncertainties of the of the experimental revegetation program, this impact would remain a potentially significant unavoidable adverse impact that would result from the development of the access road as proposed.

A small number of tarplants were found adjacent to, but outside of, the proposed landfill. These plants may be adversely impacted, either directly or indirectly, by development of the landfill as proposed. These impacts would be avoided by minor adjustments of the landfill boundary and provision of a minimum 25-foot buffer area to avoid impacts to this sensitive species.

Nevin's brickellbush (Brickellia nevinii) was found along the existing road that borders the northern perimeter of the site. This species is not endangered, and is found in sufficient numbers and distributed widely enough that the potential for extirpation is low at this time (CNPS List 4 - Smith & Berg, 1988). This population would not be directly impacted by the development of the proposed landfill, no mitigation measures are proposed.

Sensitive Communities. Development of the proposed landfill would result in the loss of 90 acres of southern coast live oak riparian forest and approximately 641 trees (578 oaks, 63 sycamores). Two sensitive tree species occur, coast live oak (Quercus agrifolia) and western sycamore (Platanus racemosa). The majority of the trees are in good health, with a cross section of different age classes, including saplings. The latter is evidence of a healthy community because samplings indicate regeneration.

The loss of this habitat cannot be fully mitigated on site due to the limited availability of nonimpacted suitable habitat. Given the restoration ratio of 3:1 for riparian communities and 3:1 for significant trees, approximately 270 acres and 1,923 trees (1,734 oaks and 189 sycamores, with additional understory and ground cover species) would be needed. Approximately 74 acres of suitable habitat is present within the property boundary where existing oak woodlands may be expanded to achieve partial restoration of

the habitat lost. The mitigation sites were selected based only on aerial photo interpretation and would have to be field truthed to confirm that these sites are riparian versus nonriparian oak woodland.

Approximately 12 acres of jurisdictional wetlands in Blind Canyon would be removed due to grading and construction of the proposed landfill. These acres occur within the southern coast live oak community. The loss of these communities would be a significant impact that could be mitigated by in kind enlargement or enhancement of existing wetlands or the restoration of wetland communities on the project site at a minimum ratio of 3:1.

Potentially suitable restoration habitat may exist adjacent to the study area, within the proposed property boundary. Approximately 74 acres of potentially suitable restoration habitat for southern coast live oak riparian forest has been identified. However, the sites were chosen based on aerial photo interpretation and would have to be field truthed to determine if they are suitable for restoration. Wetland communities cannot be restored on the closed landfill areas. Locations and types of off-site wetland restoration are subject to determination by the Army Corps of Engineers and the CDF&G during the permit process for Section 404 (CRF Title 33).

The coast live oak woodland is the only other woodland identified at Blind Canyon. Although the majority of the oaks in these areas are of good health, there is some evidence of disturbance by grazing livestock. Landfill development would result in the direct loss of 67 acres of coast live oak woodland and approximately 176 oak trees. The loss of the coast live oak woodland would be a significant impact that could be mitigated on site. Given a 3:1 restoration ratio, 201 acres and 528 oak trees (along with understory species) would have to be replaced to mitigate this loss in the long term. Impacts to oak woodlands community would remain significant until restored or replaced communities achieved areal coverage and densities similar to that which presently occurs on the site. Impacts to the oak woodlands community would remain significant until restored or replaced communities achieved areal coverage and diversities similar to that which presently occurs on the site. Mitigation areas would be monitored, supplied with a supplemental water source until established, and fenced to keep out grazing cattle. Because this oak woodland is not a riparian habitat, portions of it may also be restored on the 532 acres of the

closed landfill and potentially serve as a wildlife movement area across the closed site. The potential numbers of trees loss/replaced are presented in Table 4.3-8.

Table 4.3-8 Blind Canyon Tree Loss/Replacement

<u>Species</u>	<u>Existing total</u>	<u>Removed by project</u>	<u>Replaced at 3:1</u>	<u>Total after project</u>
Coast live oak	1,268	754	2,262	2,776
Western sycamore	<u>63</u>	<u>63</u>	<u>189</u>	<u>189</u>
Total	1,331	817	2,451	2,965

Source: McClelland Consultants, 1990.

Because of the widespread distribution of chamise chaparral throughout Southern California, the loss of this community due to the development of the potential landfill would be an insignificant impact.

The native grass species that occur throughout this site are found primarily in open canopy areas of oak woodlands and in small patches in the chamise chaparral/nonnative grassland. The precise acreage of native grassland was not estimated because of its distribution within other communities. Because of the limited distribution of native grasslands on a regional basis and habitat loss from urban and agricultural development, the loss of native grass species would be a significant adverse impact that could be feasibly mitigated to insignificance by incorporating native grass species in the revegetation program of the closed landfill.

The development of a landfill in Blind Canyon could result in the reduction of surface and groundwater to downstream vegetation communities located outside the fill area and/or outside the study area. The reduction of surface water and groundwater reaching downstream wetland/ riparian

communities located outside the proposed fill area and along the access road corridor would result in the loss of vigor and possibly vegetation dieback in these communities. This could result in the degradation of those vegetation communities. These indirect impacts would be significant and adverse, but could be feasibly mitigated to less than significant levels by releasing seasonal rainfall from detention basins gradually during the growing season of riparian communities. This measure may require the design of detention basins to accomodate this flow.

Fauna. Removal of riparian and woodland habitat as previously described would remove important wildlife use areas. These habitats are considered important to wildlife because they are scarce and declining on a regional level, provide a variety of vertical habitats, and function as local and regional movement pathways for many animals. In addition, portions of the most valuable raptor nesting habitat found on-site are located within these habitats. The loss of 157 acres of riparian and oak woodland would be a significant unavoidable impact to wildlife on both a local and regional basis. This would be mitigated by providing restored and enhanced riparian and oak woodland areas at a 3:1 replacement ratio.

Portions of Blind Canyon are located within Significant Ecological Area (SEA) 20 (site) and SEA 21 (access corridor). SEAs 20 and 21 were both designated in part to provide a corridor for gene flow and species movement between the Santa Monica and San Gabriel Mountains via the Simi Hills¹¹⁴. Within the site, the movement pathway located along the main drainage area through the bottom of the canyon would be permanently removed by landfill development. Mitigation measures are available to reduce or avoid impacts to movement pathways along the western site boundary. As discussed previously, these measures could include revegetating with plant species that provide food and/or cover; providing permanent year-round surface water stations (guzzlers) to attract animals to the movement area; and/or enhancing adjacent corridors. The loss of Blind Canyon as a movement pathway could be significant and unavoidable on a local and regional scale. In the long term, given the rate of urban development within the County area, the potential landfill site, when closed, could be an important remaining open space and opportunity for wildlife movement.

Unavoidable Impacts

The following unavoidable significant adverse impacts have been identified for Blind Canyon, after incorporation of all feasible mitigation measures:

- Removal of approximately 54 acres of grassland/chaparral habitat containing Santa Susana Tarplant (Hemizonia minthornii), a state listed rare plant.
- Loss of sensitive communities until restored vegetation matures.
- Localized loss of wildlife movement corridor through the bottom of Blind Canyon, during the operating life of the site.
- Removal of the landfill area from SEAs 20 and 21.

4.3.4 Towsley Canyon

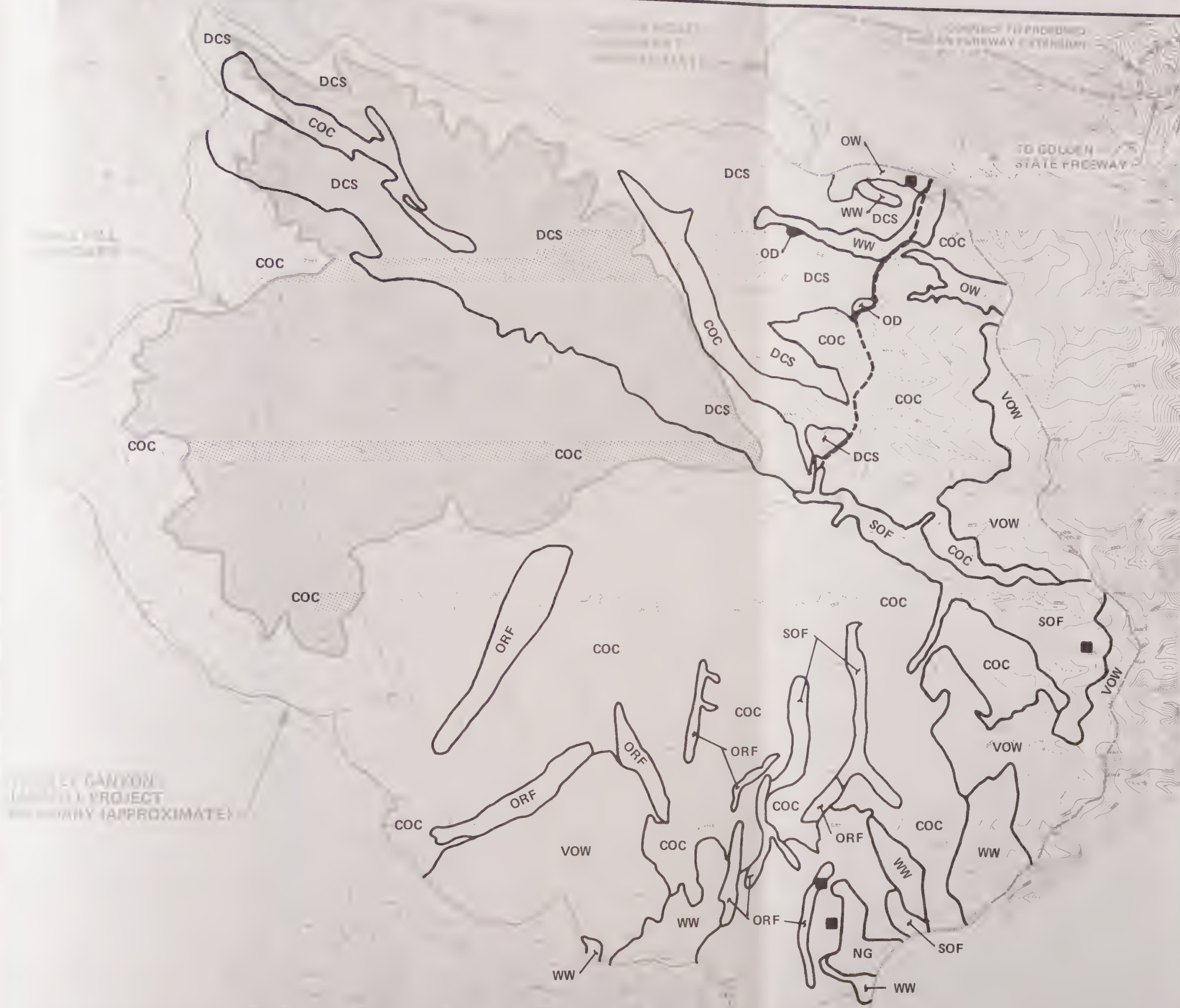
Setting

The site specific biological setting of the potential Towsley Canyon Landfill site is discussed below. Floral and faunal characteristics are discussed.

Flora. The ten major plant communities of Towsley Canyon and access road alignment area are shown on Figures 4.3-6 and 4.3-7 and include ceanothus oliganthus chaparral, Diegan coastal sage scrub, valley oak woodland (savanna), bigcone spruce canyon live oak forest, southern coast live oak riparian forest, California walnut woodland, coast live oak woodland, nonnative grassland, mulefat scrub, and southern willow scrub. Table 4.3-9 summarizes the acreage and total tree counts by community.

The following discussion presents a brief summary of the settings of each of the above listed communities. A list of species typically found within each of these communities is presented on Table 4.3-10.

Ceanothus Oliganthus Chaparral. Ceanothus oliganthus chaparral is the dominant community on the study area (none occurs in the access road corridor). This habitat is most prevalent in the southern and western portions of the study area and intergrades with Diegan coastal sage in the north and east. This community is most prevalent in the southwest portion of the canyon, where the oak woodlands and bigcone spruce communities are replaced by chaparral,



0 1000 2000
SCALE IN FEET
(APPROXIMATE)

LEGEND:

VEGETATION COMMUNITIES

- SOF Bigcone Spruce Canyon Oak Forest
- VOW Valley Oak Woodland (Savanna)
- DCS Diegan Coastal Sage Scrub
- WW California Walnut Woodland
- OW Coast Live Oak Woodland
- NG Non-native Grassland
- ORF Southern Coast Live Oak Riparian Forest
(contains some Wetland Areas)
- Mule Fat Scrub and Southern Willow
Scrub Riparian Corridor
(contains some Wetland Areas)
- COC Ceanothus Oliganthus Chaparral
- OD Oil Development
- Oak and Bigcone Spruce Sample Plot

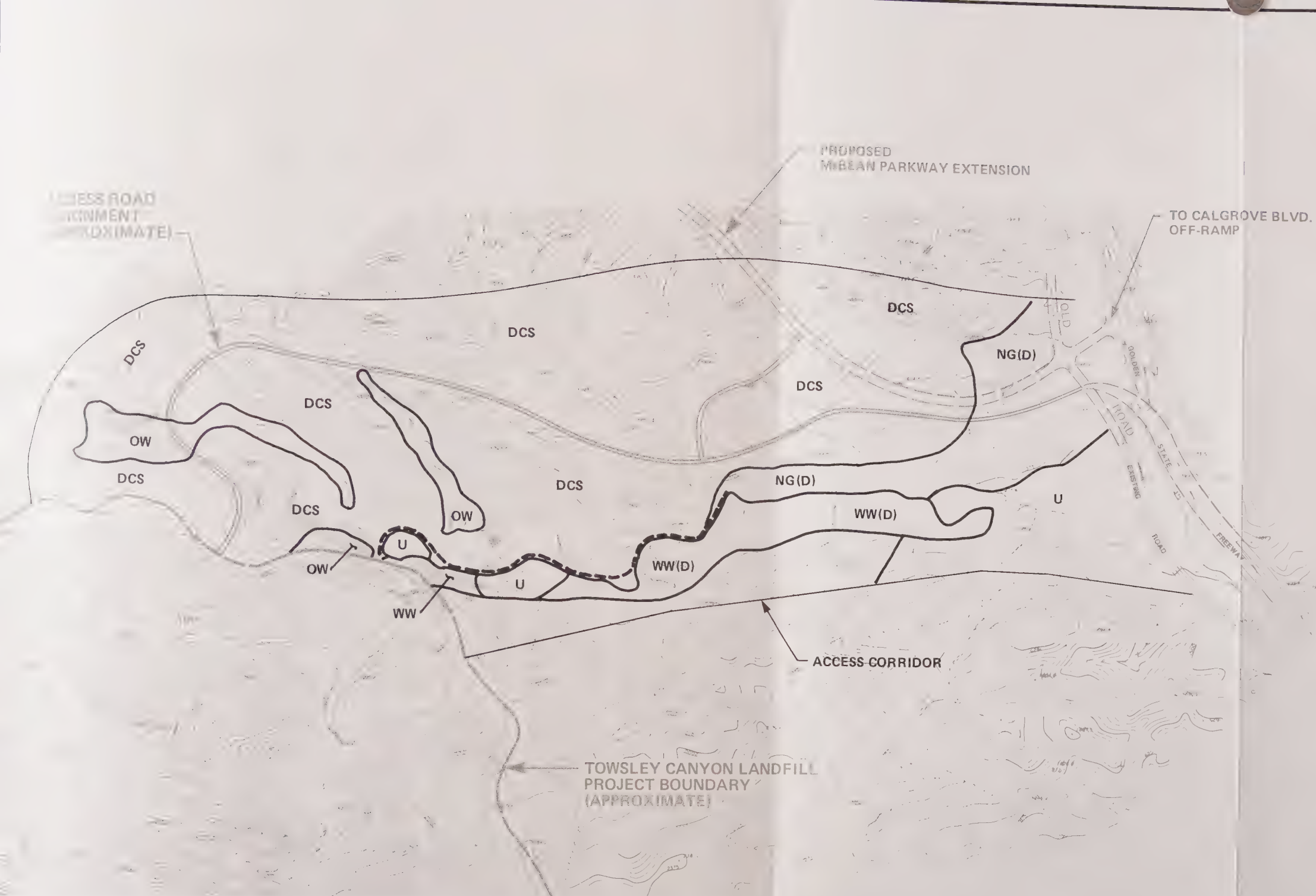
NOTE:

FILL AREA

Figure 4.3-6 Towsley Canyon Landfill Vegetation Communities

Revised from County Sanitation District No. 1
Truckee County, California, 1988.

Source: McClelland Consultants, October 1989.



LEGEND:

VEGETATION COMMUNITIES

- DCS** Diegan Coastal Sage Scrub
- WW** California Walnut Woodland
- OW** Coastal Live Oak Woodland
- NG** Non-native Grassland

--- Mule Fat Scrub and Sotuhern Willow Scrub Riparian Corridor (contains some Wetland Areas)

(D) Disturbed

U Urban

Figure 4.3—7 Towsley Canyon Landfill Access Road Alignment Vegetation Communities

Table 4.3-9 Towsley Canyon Acreage and Tree Count

Plant community ^a	Study area acreage	Access corridor acreage ^b	Sensitive tree count/study area ^c	Sensitive tree count/access road ^c
Ceanothus oliganthus chaparral	1,562	0	96	0
Diegan coastal sage	453	504	136	0
Valley oak woodland (savanna)	332	0	37,756	0
California walnut woodland	48	57	0	0
Nonnative grassland	13	65	0	0
Bigcone spruce canyon oak forest	108	0	14,610	0
Southern coast live oak riparian forest ^c	72	0	11,011	0
Coast live oak woodland	21	28	2,594	195
Mulefat scrub/southern willow scrub ^d	15	5	0	0
Urban	0	33	0	0
Total	2,624	692	66,203	195

^aSee Figures 4.3-6 and 4.3-7 for location of plant communities.

^bThe actual access road alignment will only impact a small portion of the access corridor area.

^cApproximately 6 acres of jurisdictional wetlands occur within this community.

^dApproximately 15 acres of jurisdictional wetlands occur within this community.

Source: McClelland Consultants, 1990.

Table 4.3-10

Towsley Canyon Flora Communities, Sub-Communities,
and Dominant Species Observed During Field Survey

Ceanothus oliganthus chaparral
 Hoaryleafed ceanothus (ceanothus oliganthus)
 Chamise (adenostoma fasciculatum)

Diegan coastal sage scrub
 California sagebrush (artemisia californica)

Valley oak woodland (savanna)
 Valley oak (quercus lobata)
 Coast live oak (quercus agrifolia)
 Canyon live oak (quercus chrysolepis)
 Interior live oak (quercus wislizenii)

Bigcone spruce canyon live oak forest
 Bigcone spruce (pseudotsuga macrocarpa)
 Canyon live oak (quercus chrysolepis)

Southern coast live oak riparian forest
 Coast live oak (quercus agrifolia)
 Freemont cottonwood (populus fremontii)
 Western sycamore (platanus racemosa)
 California bay (umbellularia californica)
 White sweet clover (Melilotus albus)
 Watercress (rorippa nasturtium-aquaticum)
 Scarlet monkey flower (Mimulus cardinale)
 Rabbitfoot grass (polypogon monspeliensis)
 Giant wildrye (elymus condensatus)

California walnut woodland
 California walnut (juglans californica)

Coast live oak woodland
 Coast live oak (quercus agrifolia)
 Ripgut brome (bromus diandrus)

Non-Native grassland
 Ripgut brome (bromus diandrus)
 Wild oats (avena barbata)
 Beardless wild rye (elymus triticoides)

Native grasses
 Needlegrass (stipa lepida)
 Purple needlegrass (stipa pulchra)

Mulefat scrub/southern willow scrub
 Mulefat (baccharis viminea)
 Arroyo willow (salix lasiolepis)
 Freemont cottonwood (populus fremontii)
 Western sycamore (platanus racemosa)

Source: McClelland Consultants, 1990.

and the southern coast live oak riparian forest occurs in major drainages. There is very little understory of leaf litter. Although there is little disturbance within this community, species indicative of disturbance occur in areas adjacent to roadways.

Diegan Coastal Sage Scrub. Diegan coastal sage scrub is the dominant community in the northern quarter of the study area. This community is characterized by low woody shrubs. Garbage, litter, and natural oil seeps occur within this community in several locations in the northern extent of the study area and along the access road corridor.

Valley Oak Woodland (Savanna). The valley oak woodland community intergrades with both California walnut woodland and bigcone spruce canyon live oak forest and is found on broad, moderate slopes. This open canopy community forms a savanna with a grassy understory with valley oak (Quercus lobata) as the dominant species of the study area (none occurs in the access road corridor or within the proposed fill area). The largest occurrence of this community is within the southern half of the study area. Livestock grazing is the primary disturbance, and no sapling or seedling trees were noted.

Bigcone Spruce Canyon Live Oak Forest. In Towsley Canyon, this community occurs on steep north facing slopes with an open canopy sparse understory. The dominant understory plants are shrubs and nonnative grasses. This habitat does not occur within the access road corridor or within the proposed fill area.

Southern Coast Live Oak Riparian Forest. Southern coast live oak riparian forest is the dominant riparian community in Towsley Canyon. This community is a dense riparian woodland. Evidence of disturbance by livestock grazing is common. This habitat does not occur in the access road corridor, although small groves of coast live oak (generally under 1 acre) occur in portions of several drainages within the proposed fill area.

California Walnut Woodland. California walnut woodland occurs in dense stands in the southern portion of the study area. The walnut woodland is less dense in the north and northeast portions of Towsley Canyon but forms a continuous woodland extending from just inside the study area through the south side of the access road corridor. The majority of trees are in good health. The understory in this community is sparse. This community does not occur in the proposed fill area.

Coast Live Oak Woodland. The coast live oak woodland community occurs in only two locations: in the northern portion of the study area and in the access road corridor. It is not found within the proposed fill area. It is dominated by coast live oak (Quercus agrifolia) with a poorly developed shrub layer. The understory is dominated by ripgut brome (Bromus diandrus). The community is disturbed by grazing, and there are no saplings or young trees.

Nonnative Grassland. Nonnative grasslands occur primarily in the proposed access road corridor on the study area in small pockets or as ground cover within other communities, including the coast live oak woodland and valley oak woodland savanna. Ruderal species are found in this community, which has been heavily grazed by cattle. This community does not occur within the proposed fill area.

Mule Fat Scrub/Southern Willow Scrub. The mulefat scrub/southern willow scrub community is found along the creek paralleling the existing access road in the north portion of the study area in major canyons of the fill area and along the access road corridor. These communities, which are maintained as early succession communities by frequent flooding and ongoing disturbance and have been heavily grazed and trampled by livestock.

Urban. Within the access corridor are paved and gravel roads. An abandoned building and a mobile home, which is a residence, are also in this area. There is considerable debris (junked automotive parts, garbage, etc.) and very little vegetation present.

Sensitive Plants and Communities. Several woodland communities were located in Towsley Canyon. These include bigcone spruce canyon live oak forest, valley oak woodland, California walnut woodland, coast live oak woodland, southern coast live oak riparian forest, mule fat scrub, and southern willow scrub. Wetlands have been identified within the last three plant communities. Wetland vegetation in the southern coast live oak community is displaced abruptly by components of oak woodlands and ceanothus oliganthus chaparral. The mule fat scrub/southern willow scrub community also has an abrupt boundary where it is displaced by Diegan coastal sage and bordered by a road.

Valley oak (Quercus lobata - CNPS List 4) and Nevin's brickellbush (Brickellia nevenii - CNPS List 4) were the only sensitive plants identified within Towsley Canyon.

Valley oaks were found in low numbers throughout the study area. Nevin's brickellia was found throughout the study area adjacent to roadways and other disturbed areas.

The inventory of tree species was done on Towsley Canyon by sample plots instead of actual measurement of all trees because of the inaccessibility of many woodlands and the high number of trees present. Four sample plots were located in different communities, including valley oak woodland (savanna), southern coast live oak riparian forest, coast live oak woodland, and bigcone spruce canyon oak forest.

Fauna. Fauna observed during field surveys included mammals, birds, amphibians and reptiles, and butterflies. Each of these is discussed below along with a review of the sensitive wildlife and habitats encountered within the study area.

Mammals. The relative quality of habitat in this area is good for small mammals with the presence of abundant seeds providing a good food source. Rodent holes were also abundant, particularly along the small berms of the old roads. Small mammals (see Table 4.3-11) were seen during the field surveys and make up a large part of the prey base important to raptors and larger carnivorous mammals. Based on information obtained from animal tracking, it was determined that mountain lion, bobcat, coyote, and mule deer utilize the roads in the western portion of Towsley Canyon as movement corridors between the chaparral and woodland communities.

Table 4.3-11 Towsley Canyon Mammals Observed
During Field Survey

California ground squirrel
Valley pocket gopher
Desert cottontail
Dusky footed woodrat
Western gray squirrels
Deer mouse
Western harvest mouse
Brush mouse
California pocket mouse
Pacific kangaroo rat

Source: McClelland and Consultants, 1990

Domestic horses and cattle were observed just outside of the study area's southern boundaries. Although these domestic animals were not actually seen on the study area, evidence of past and present occasional use was noted. Overgrazing has not yet occurred, but most drainages and stream side vegetation in the southern portions of this site have been trampled and subjected to large amounts of cattle droppings.

The presence of surface water in the northern portion of Towsley Canyon is important to the wildlife in the area. Although this area is disturbed by natural oil seeps and human activities (past and present), the overall habitat values are enhanced by the year-round availability of surface water.

Birds. An abundant variety of avifauna was present during the survey at Towsley Canyon (see Table 4.3-12). The many different vegetation communities at this site provide numerous habitats and ecotones for a wide variety of birds. The presence of year-round surface water and its associated vegetation elevates the habitat quality for birds in the canyon.

Hunting habitat for raptors is limited, particularly in the lower elevations of the study area, as a result of the vast amounts of coastal sage and chaparral habitats. However, very good hunting habitat exists in the valley oak woodland and bigcone spruce habitat above 2,500 feet.

Amphibians and Reptiles. Surface water was present within the riparian areas in the northern portion of the study area during the survey period. However, portions of this surface water were polluted by natural oil seeps and/or leaks from old oil wells. Although the water further upstream in the southern willow scrub/mulefat scrub habitat appeared clean, no amphibians were found within the study area. The two most common lizards encountered during the survey were western fence lizard and side-blotched lizard. Snakes were not found within this canyon during the surveys, but acceptable habitat is present for common species of southern California.

Wetlands. Approximately 20 acres of jurisdictional wetlands occur within the Towsley Canyon study area. Two wetland communities, mulefat scrub and southern willow scrub, occur along the creek paralleling the existing access road, within the access road corridor, and in major canyons of the fill area. Approximately 9 acres of this

Table 4.3-12 Birds Observed in Towsley Canyon

Common name	Scientific name
Andean condor ^a	Vultur gryphus
Turkey vulture ^a	Cathartes aura
Cooper's hawk ^a	Accipiter cooperii
Red-tailed hawk ^a	Buteo jamaicensis
American kestrel ^a	Falco sparverius
California quail	Callipepla californica
Wild turkey	Meleagris gallopavo
Mourning dove	Zenaida macroura
Great horned owl ^a	Bubo virginianus
Western screech owl ^a	Otus kennicottii
White-throated swift	Aeronautes saxatalis
Anna's hummingbird	Calypte anna
Allen's hummingbird	Selasphorus sasin
Northern flicker	Colaptes auratus
Acorn woodpecker	Melanerpes formicivorus
Western kingbird	Tyrannus verticalis
Ash-throated flycatcher	Myiarchus cinerascens
Western wood-pewee	Contopus sordidulus
Western flycatcher	Empidonax difficilis
Purple martin ^a	Progne subis
Cliff swallow	Hirundo pyrrhonota
Barn swallow	Hirundo rustica
Scrub jay	Aphelocoma coerulescens
Steller's jay	Cyanocitta stelleri
Common raven	Corvus corax
Wrentit	Chamaea fasciata
Plain titmouse	Parus inornatus
Bushtit	Psaltiriparus minimus
Bewick's wren	Thryomanes bewickii
Canyon wren	Catherpes mexicanus
Western bluebird	Sialia mexicana
Mountain bluebird	Sialia currucoides
Northern mockingbird	Mimus polyglottos
California thrasher	Toxostoma redivivum
Phainopepla	Phainopepla nitens
Black-headed grosbeak	Pheucticus melanocephalus
Rufous-sided towhee	Pipilo erythrophthalmus
Brown towhee	Pipilo fuscus
Grasshopper sparrow ^a	Ammodramus savannarum
Lark sparrow	Chondestes grammacus
Dark-eyed junco	Junco hyemalis
Fox sparrow	Passerella iliaca
Western tanager	Piranga ludoviciana
Lesser goldfinch	Carduelis psaltria
Purple finch	Carpodacus purpureus

^aSensitive species.

Note: Species observed (or presence identified by sign) during spring/summer 1989 surveys.

Source: McClelland Consultants, 1990.

community occur in the proposed fill area. Other wetlands occur within the southern coast live oak riparian communities outside of the proposed fill area.

Butterflies. The numerous habitat types in Towsley Canyon provide a large number of food sources for a variety of butterflies. Overall habitat quality for butterflies is high, and a wide range of species can be expected to utilize the canyon. Habitat values are reduced for many butterfly species in disturbed areas because of reduced diversity and abundance of the vegetation. These conditions are present near the oil seeps and pumps in northern Towsley and grazed areas in the southern portions of the study area. These disturbed areas are limited in size and do not affect the overall value of the habitats for butterflies. The altitude of the site, desert influences, and the year-round supply of surface water add to its high overall value.

Sensitive Wildlife and Habitats. Some sensitive habitats and wildlife species are present within the study area. Areas of critical habitat value designated on Figures 4.3-8 and 4.3-9 include the rock outcrops, movement corridors, areas with surface water, woodland habitats, and mule fat scrub/southern willow scrub wetland habitats. These areas are of high value to many types of animals for foraging and nesting/denning. In addition, these habitat are scarce and/or declining on a regional level. The presence of surface water in the mulefat scrub and southern willow scrub habitat is also of critical value to many types of wildlife and is a limited resource in arid southern California.

Sensitive animals found during the survey of the study area included purple martin within the southwestern chaparral community and a grasshopper sparrow in a grassland area. In addition, two coast horned lizards were discovered within the boundaries of the study area, one live and one partial skeleton. Monarch butterflies encountered in the study area were the only sensitive butterfly identified.



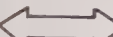

Impacts and Mitigation Measures

Development of Towsley Canyon as a landfill could cause potential impacts to the flora and fauna of the area. Diegan coastal sage, although not considered a sensitive plant community, provides valuable wildlife habitat for a number of sensitive species as discussed in the next section. Impacts and mitigation measures are described below.




LEGEND:

IMPORTANT WILDLIFE HABITATS

-  Sensitive Habitat Areas
-  Potential High Wildlife Use Areas
-  Major Wildlife Movement Patterns
-  Rock Outcrop

VEGETATION COMMUNITIES

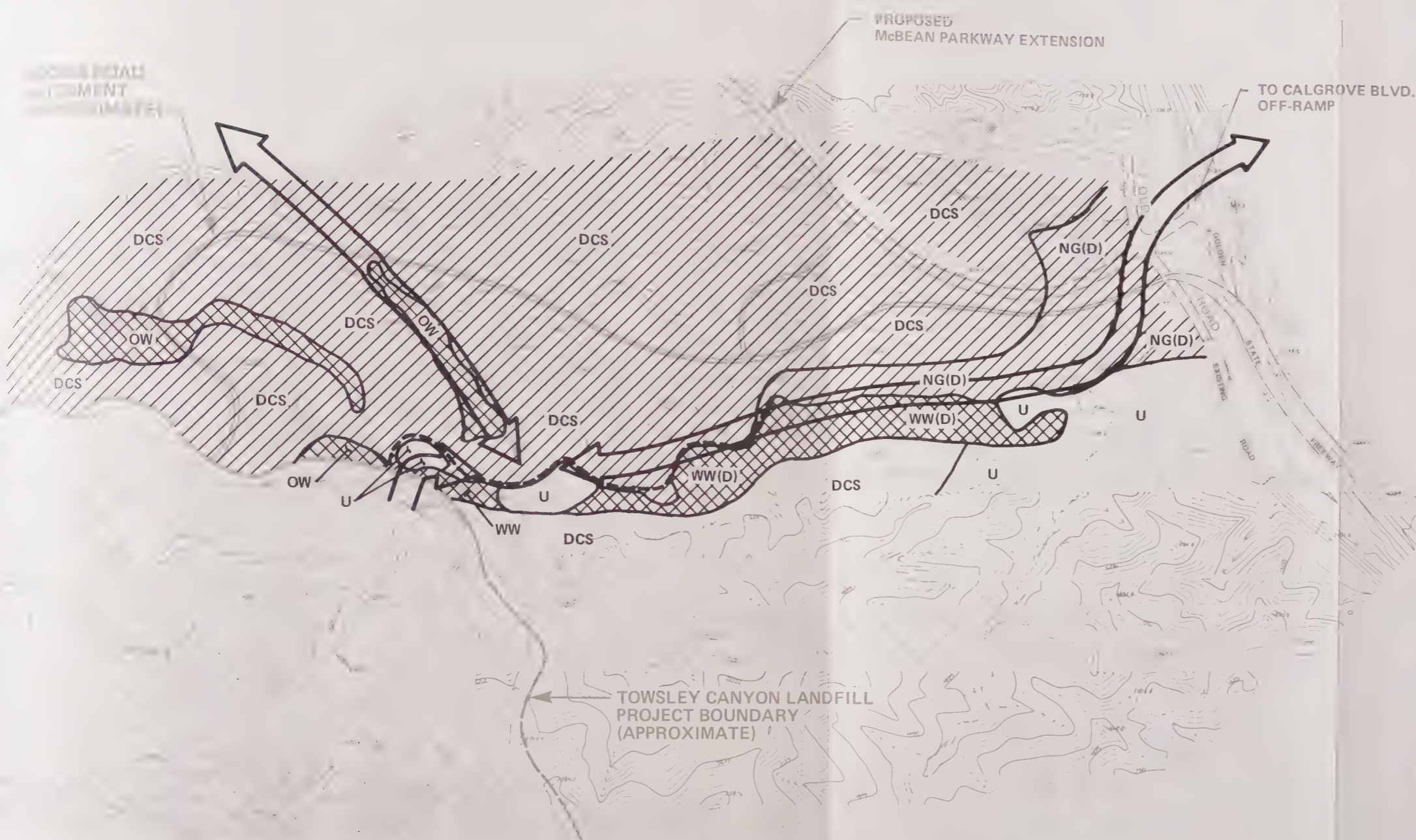
- SOF** Bigcone Spruce Canyon Oak Forest
- VOW** Valley Oak Woodland (Savanna)
- DCS** Diegan Coastal Sage Scrub
- WW** California Walnut Woodland
- OW** Coast Live Oak Woodland
- NG** Non-native Grassland
- ORF** Southern Coast Live Oak Riparian Forest (contains some Wetland Areas)
-  Mule Fat Scrub and Southern Willow Scrub Riparian Corridor (contains some Wetland Areas)
- COC** Ceanothus Oliganthus Chaparral
- OD** Oil Development
-  Oak and Bigcone Spruce Sample Plot

NOTE:

-  FILL AREA



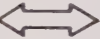
Figure 4.3-8 Towsley Canyon Landfill Important Wildlife Habitats

Source: McClelland Consultants, October 1989.



LEGEND:

IMPORTANT WILDLIFE HABITATS

-  Sensitive Habitat Areas
-  Potential High Wildlife Use Areas
-  Major Wildlife Movement Patterns

VEGETATION COMMUNITIES


- DCS** Diegan Coastal Sage Scrub
- WW** California Walnut Woodland
- OW** Coast Live Oak Woodland
- NG** Non-native Grassland
-  Mule Fat Scrub and Southern Willow Scrub Riparian Corridor (contains some Wetland Areas)
- (D)** Disturbed
- U** Urban

Figure 4.3—9 Towsley Canyon Landfill Access Road Alignment Important Wildlife Habitats

Source: McClelland Consultants, October 1989.

Flora. Development of the fill area proposed for Towsley Canyon would result in the direct removal of 760 acres of the study area vegetation consisting of the chaparral and coastal sage mulefat scrub, and southern willow scrub. Development of the proposed access road would result in the direct removal of 75 acres of vegetation, including approximately 1 acre of oak woodland containing significant trees. Table 4.3-13 summarizes acreage potentially removed by landfill construction and indicates the proposed mitigation acreages (based on 3:1 restoration ratios).

Sensitive Species. Valley Oak (Quercus lobata) was found in several oak and riparian/wetland communities. This species of oak is widespread and relatively abundant, but is considered threatened by loss of habitat from urbanization and agriculture and is on CNPS List 4 - a watch list (Smith & Berg, 1988). Development of the potential landfill would not result in the loss of valley oaks within the landfill site, and the access road construction corridor.

A single Nevin's brickellbush (Brickellia nevenii) was found in the ceanothus oliganthus chaparral community adjacent to rock outcrops. This species is not endangered, and is found in sufficient numbers and distributed widely enough that the potential for extirpation is low at this time (CNPS List 4 - Smith & Berg, 1988). This species would not be impacted by development of the proposed landfill; therefore, no mitigation measures are proposed.

Sensitive Communities. No direct impacts to the sensitive communities of southern coast live oak riparian forest, coast live oak woodland, or California walnut woodland would occur from development of the proposed landfill. However, the proposed access road construction corridor would impact coast live oak woodland. The access road would be designed and constructed to minimize the number of oaks and other significant trees directly and indirectly impacted by construction and operation. Direct loss of significant trees could be mitigated to less than significant levels by revegetation on a 3:1 basis.

Originally one acre (1 percent) of the bigcone spruce canyon live oak forest would have been lost due to landfill construction. Based on the methods used to calculate the average number of trees within an acre of this habitat, up to 134 trees could occur in this area. However, the project was redesigned to avoid this community. A minimum 50-foot undisturbed buffer area of native vegetation would

Table 4.3-13 Towsley Canyon Landfill Potential Impact on Sensitive Flora Acreage

Plant community ^a	Total study area acreage	Landfill Impact acreage	Access road impact acreage	Total impact acreage	Restoration acreage needed ^b
Ceanothus oliganthus chaparral	1,562	482	0	494	0
Diegan coastal sage	453	269	72	355	0
Valley oak woodland (savanna)	332	0	0	0	0
California walnut woodland	48	0	0	0	0
Nonnative grassland	13	0	2	2	0
Bigcone spruce canyon oak forest	108	0	0	0	0
Southern coast live oak riparian forest	72	0	0	0	0
Coast live oak woodland	21	0	1	1	4
Mulefat Scrub/Southern Willow Scrub	15	9	0	9	27
Total	2,624	760	75	861	31

^aSee Figure 4.3-7 for location of plant communities.

^bSensitive communities only.

Source: McClelland Consultants, 1990.

also be provided to protect the root zone of trees adjacent to the fill area. No motor vehicle access or foot traffic would be permitted within the buffer zone.

The native grass species that would be removed by development of the proposed landfill are found in the Diegan coastal sage scrub and ceanothus oliganthus chaparral. Due to their low level of occurrence regionally, the loss of these plants would be a significant adverse environmental impact that could be feasibly mitigated to insignificant levels by incorporating native grass species in the revegetation program of the closed landfill.

The ceanothus oliganthus chaparral community is widespread in Towsley Canyon and is abundant throughout Southern California. The loss of 494 acres of this community would be an insignificant adverse impact.

Diegan coastal sage scrub occupies a large area of Towsley Canyon. Development of the landfill as proposed would result in the loss of 293 acres within the site and 46 acres within the access road construction corridor. This impact would be a significant impact because Diegan coastal sage scrub provides wildlife habitat for a number of sensitive species as discussed below.

Approximately 9 acres of jurisdictional wetlands in Towsley Canyon would be removed due to grading and construction of the proposed landfill. These acres occur within the mule-fat scrub/southern willow scrub communities. The loss of these wetlands would be a significant impact that could be mitigated by in kind enlargement or enhancement of existing wetlands or the restoration of wetland communities on the project site at a minimum ratio of 3:1.

Wetlands communities cannot be restored on the closed landfill areas. Approximately 27 acres of potentially suitable restoration habitat may exist within the proposed project boundary. Locations and types of off-site wetland restoration are subject to determination by the Army Corps of Engineers and the CDF&G during the permit process for Section 404 (CRF Title 33).

Tree loss could be mitigated on the 788-acre closed landfill. The potential numbers of trees lost/replaced are presented in Table 4.3-14. Approximately 232 trees would be removed from the potential fill area and 26 trees would be removed along the proposed access route.

Table 4.3-14 Towsley Canyon Tree Loss/Replacement

Species	Existing total	Removed by project	Replaced at 3:1	Total after project
Big cone spruce (<i>Pseudotsuga macrocarpa</i>)	9,670	0	0	9,670
Coast live oak (<i>Quercus agrifolia</i>)/canyon live oak (<i>Quercus chrysolepis</i>)	37,450	258	774	37,966
Valley oak (<i>Quercus lobata</i>)	20,580	0	0	20,580
Western sycamore (<i>Platanus racemosa</i>)	<u>1,410</u>	<u>-</u>	<u>---</u>	<u>1,410</u>
Total	69,110	258	774	69,626

Source: McClelland Consultants, 1990.

Final alignment of the route between the access road corridor and proposed fill area would be designed to avoid the California walnut woodland community and the mulefat/willow riparian corridor (paralleling the existing jeep trail). Significant trees and sensitive riparian habitats unavoidably lost would be revegetated at a ratio of 3:1. The potential for adverse impacts of these communities could be reduced or avoided through careful layout of the access route.

The development of a landfill in Towsley Canyon could result in the reduction of surface and groundwater to downstream vegetation communities located outside the fill area and/or outside the study area. The reduction of surface water and groundwater reaching downstream wetland/riparian communities located outside the proposed fill area and along the access road corridor would result in the loss of vigor and possibly vegetation dieback in these communities. This could result in the degradation of those vegetation communities. These indirect impacts would be significant and adverse, but could be feasibly mitigated to less than significant levels by releasing seasonal rainfall from detention basins gradually during the growing season of riparian communities. This measure may require the design of detention basins to accommodate this flow.

Fauna. The area of greatest sensitivity in Towsley Canyon with respect to wildlife are the arboreal habitats and the extensive southern willow scrub/mulefat scrub riparian habitat in the northern section, none of which are impacted by the proposed landfill. These areas provide many necessary resources that are locally and regionally limited in availability.

The Diegan coastal sage scrub community is identified as a potential high use area providing suitable habitat for two species of special concern¹¹⁶: California black-tailed gnatcatcher and San Diego horned lizard. The loss of 283 acres of the community on site and 72 acres for construction of the access road would represent a potential adverse impact to these species. Although this community is widespread, loss of habitat is a major reason for the sensitivity of these species. The loss of this habitat would be locally significant because of its potential use by identified sensitive species. The local impact would be mitigated to less than significant levels through revegetation of this community on a 1:1 basis on the closed landfill.

The ceanothus oliganthus chaparral community is regionally abundant and low in wildlife use and habitat value. The loss of 494 acres of this community would not be significant.

Towsley Canyon bisects SEA 20, designated in part to provide a corridor for gene flow and species movement between the Santa Monica and San Gabriel Mountains via the Simi Hills¹¹⁴. East of Towsley Canyon, the Interstate 5 corridor represents a barrier to terrestrial wildlife movement. Choke points, passageways under the freeway through which wildlife gains access to different areas, are located adjacent to the eastern border of SEA 20. Access to these critical movement areas could be constricted or interrupted by landfill and access road development. Regionally, this is a critical movement area that will become more valuable to wildlife as urban growth increases to the Santa Clarita, San Fernando, and Simi Valleys. On the other hand, as growth increases, the proposed landfill site, when closed, could be an important remaining open space and opportunity for wildlife movement. This regional adverse impact could be offset by provisions for higher quality movement habitat in areas with restricted pathways. Examples would include the enhancement of passageways under freeways or through other regional choke points, which would improve free movement of wildlife through urbanized areas to important habitats.

Locally, within the proposed fill area, a major local movement pathway would be unavoidably lost, resulting in a adverse impact to local wildlife. Alternative pathways within the site, but outside of the proposed fill area, would still remain and are separated by topography and vegetation that would serve as buffer zones from noise and other landfill related disturbances. The local impact could be mitigated by enhancing and expanding the remaining wildlife pathways within the site boundary. This could be accomplished through several measures such as revegetating with plant species that provide food and/or cover and providing permanent year-round surface water stations (guzzlers) to attract animals to the movement area.

An important local and regional pathway is present within the access road corridor. The regional importance of this route relates to its connection under the Interstate 5 freeway to open space areas of the San Gabriel Mountains. Development of the access road as proposed would avoid the majority of the primary movement corridor (although the road would cross it once, near the freeway). The access road also would cross a secondary movement area. Under-road passageways should be incorporated into the road design to facilitate safe wildlife access across the road. These measures could reduce the impact to acceptable levels.

Unavoidable Impacts

The following unavoidable significant impacts have been identified, after incorporation of all feasible mitigation measures.

- Loss of a portion of major local wildlife movement corridor during the operating life of the site.
- Removal of Towsley Canyon from SEA 20.
- Loss of sensitive communities until restored vegetation matures.

4.3.5 Mission-Rustic-Sullivan Canyons

Mission Canyon Setting

The information presented below is based primarily on literature (Mission Canyon Final EIR, Sanitation Districts, 1980)⁴ and on one field survey (predictive plant survey). No detailed surveys for plants or animals were conducted on this site. The habitat mapping for the potential access road corridor was based entirely on aerial photo interpretation.

Flora. The predictive survey was the only field survey conducted at Mission Canyon, and no sensitive species were found. The major plant communities of Mission Canyon are ceanothus megacarpus chaparral, Diegan coastal sage scrub, non-native grassland, southern coast live oak riparian forest, mixed riparian, and California walnut woodland. Figure 4.3-10 presents the vegetation map for Mission Canyon. Table 4.3-15 summarizes the acreage by community.

The following presents a brief summary of the settings of each of the communities listed in Table 4.3-15. A list of the species found within each community is presented on Table 4.3-16.

Ceanothus Megacarpus Chaparral. This community is found throughout Mission Canyon and is the most common habitat within the study area.

Restored and Urban. Reclaimed and urban lands are found within the Mission Canyon property boundary. The reclaimed area is a closed and revegetated landfill that occupies the northern part of the study area. The urban area is found along the existing road at the southeast end of the canyon. Office trailers and a parking lot occupy this area. The area is presently paved and/or compacted soil and gravel with very little vegetation present.

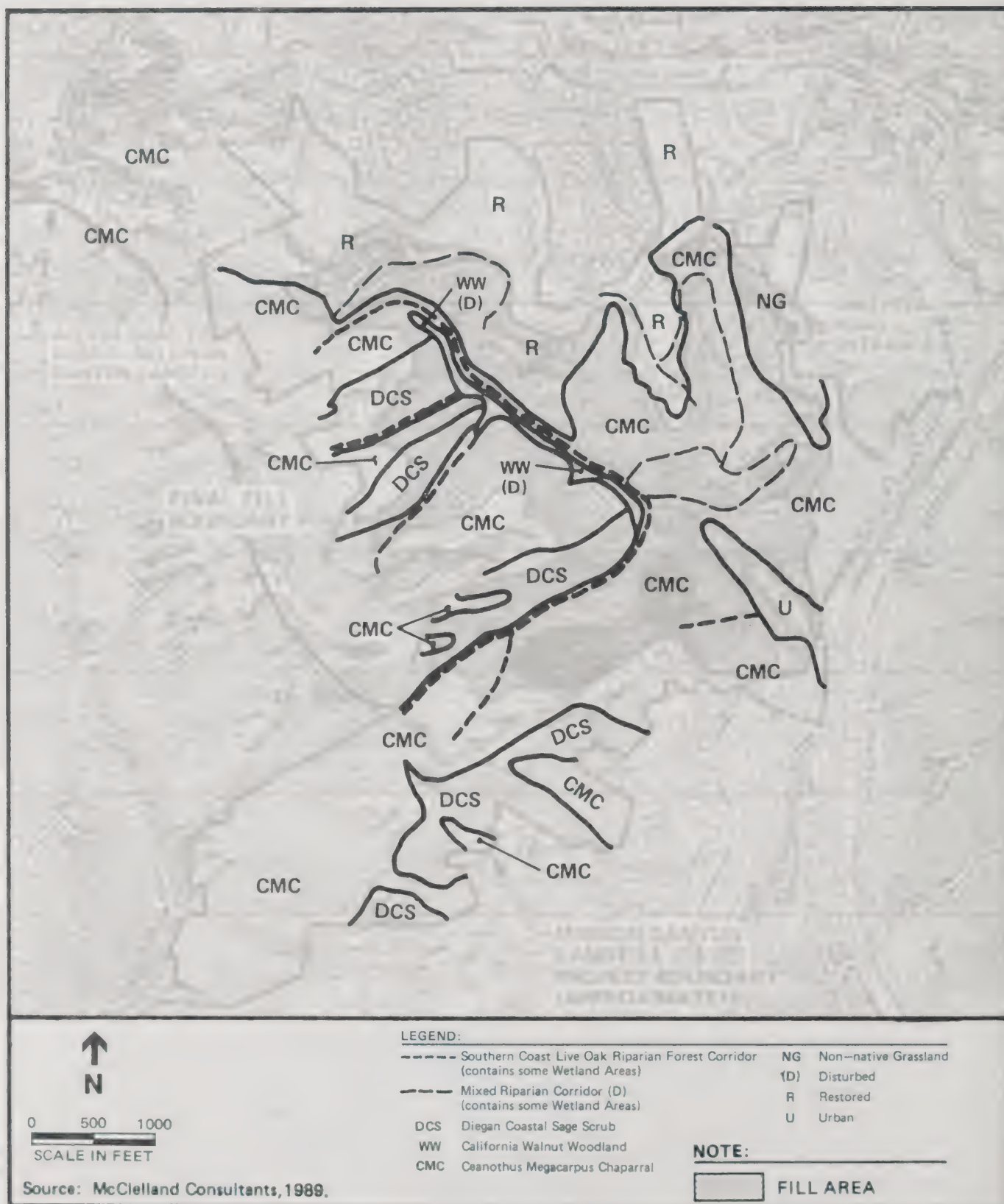


Figure 4.3-10 Mission Canyon Landfill, Vegetation Communities

Table 4.3-15 Mission Canyon Acreage by Community Type

Plant community	Study area acreage
Ceanothus megacarpus chaparral	279
Reclaimed	91
Diegan coastal sage	55
Nonnative grassland	10
Urban	9
Southern coast live oak riparian forest ^a	6
California walnut woodland	5
Mixed riparian ^b	0.6
Total	455.6

^aIncludes approximately 6 acres of jurisdictional wetlands.

^bIncludes approximately 0.6 acres of jurisdictional wetlands.

Note: Tree counts were not taken for this site.

Source: McClelland Consultants, 1990.

Table 4.3-16 Mission Canyon Flora Communities,
Subcommunities, and Dominant Species

Ceanothus Megacarpus Chaparral
Big-Pod Ceanothus (<u>Ceanothus megacarpus</u>)
Diegan Coastal Sage Scrub
Interior Buckwheat (<u>Erigonum fasciculatum</u>)
Black Sage (<u>Salvia mellifera</u>)
Laural Sumac (<u>Malosma laurina</u>)
Nonnative Grassland
Ripgut Brome (<u>Bromus diandrus</u>)
Telegraph Weed (<u>Heterotheca grandiflora</u>)
Southern Coast Live Oak Riparian Forest
Coast Live Oak (<u>Quercus agrifolia</u>)
California Walnut Woodland
California Walnut (<u>Juglans californica</u>)
Mixed Riparian
Western Sycamore (<u>Platanus racemosa</u>)
Freemont Cottonwood (<u>Populus Fremontii</u>)
Coast Live Oak (<u>Quercus agrifolia</u>)
Arroyo Willow (<u>Salix lasiolepis</u>)
Mule Fat (<u>Baccharis viminea</u>)

Source: McClelland Consultants, 1990.

Diegan Coastal Sage Scrub. This community is found on the south facing slopes between ceanothus metacarpus chaparral.

Nonnative Grassland. This community is found along the northeastern boundary of the study area.

Southern Coast Live Oak Riparian Forest. This community is found on north facing slopes and drainages.

California Walnut Woodland. This community occurs with the mixed riparian community and is along the existing roadway. There is very little understory species, and the herb component is dominated by ruderal species.

Mixed Riparian. The main riparian community along the existing road is a mixed riparian community. Although this community is similar to the southern coast live oak riparian forest, the community characteristics do not meet

the Holland definition.¹¹¹ The hard-packed soils along the road support ruderal species which are typical of disturbed places.

Wetlands. The potential exists for the presence of wetlands in Mission Canyon due to the presence of the Arroyo willow (Salix lasiolepis), an obligate wetland species.

Fauna. Wildlife surveys were not conducted at Mission Canyon. Information on the species present within this canyon was taken from the 1980 Mission Canyon Landfill EIR⁴.

Mammals. Mammals previously recorded within the study area include a variety of smaller prey animals. These animals support larger species of mammals such as coyote, fox, and bobcat. Mule deer have also been reported in Mission Canyon, although the present high level of disturbance on and near the site would tend to reduce use by this and other shy animals in the canyon.

Birds. Birds common to southern California canyons were recorded within the study area by the previous report. Raptors could be expected to soar over the study area, and some foraging habitat is present for species tolerant of urban settings, such as turkey vulture and red-tailed hawk. The lack of large riparian or woodland communities and the proximity to human activity limit the diversity of birds that would be expected to visit this canyon.

Amphibians and Reptiles. The major drainages were reported to be dry for most of the year by the previous study. Such dry conditions are not suitable habitat for most amphibians, although the western toad was listed among the known fauna of Mission Canyon. Reptiles reported to be within the study area are those species that are common throughout sage and chaparral communities in the vicinity.

Rustic-Sullivan Canyons Setting

The site specific biological setting of the potential Rustic-Sullivan Canyons Landfill site is discussed below. This information was gathered from the literature, field surveys, and aerial photo interpretation.

Flora. The major plant communities of the Rustic-Sullivan Canyons study area are: ceanothus megacarpus chaparral, sycamore alluvial woodland, erigonum coastal sage, and non-native grassland. Two wetland subcommunities occur: mulefat scrub and southern willow scrub. These communities were not mapped nor acreage calculated due to their occurrence within

other communities. Figure 4.3-11 presents the vegetation map along with the proposed fill design for Rustic-Sullivan Canyons. A similar illustration was not prepared for the access road as the ceanothus megacarpus chaparral community is the only community present. Table 4.3-17 summarizes acreage and total tree counts by community.

Table 4.3-17 Rustic-Sullivan Canyons Acreage and Sensitive Tree Count (Study Area Only)

<u>Plant community^a</u>	<u>Study area acreage</u>	<u>Access corridor acreage^b</u>	<u>Sensitive tree count</u>
Ceanothus metacarpus chaparral	2,164	91	0
Sycamore alluvial woodland ^c	317	0	1,329
Erigonum coastal sage	297	0	0
Nonnative grassland	<u>1</u>	<u>0</u>	<u>0</u>
Total	2,779	91	1,329

^aSee Figure 4.3-11 for location of plant communities.

^bBased on aerial photograph interpretation.

^cApproximately 42 acres of jurisdictional wetlands occur within this community.

Source: McClelland Consultants, 1990.

The following discussion presents a brief summary of the settings of each of the above listed communities. A list of the species typically found within each of these communities is presented in Table 4.3-18.

Ceanothus Megacarpus Chaparral. The dominant community in the study area is ceanothus megacarpus chaparral. This community is dominated by big pod ceanothus (Ceanothus megacarpus) and is both tall and dense with very little understory and extensive crown cover. The ceanothus megacarpus chaparral community has very little disturbance with minor disturbances occurring from dust and litter along roads where ruderal species exist. Scattered islands of coastal sage scrub dominated by interior buckwheat (Erigonum fasciculatum) occur within this community, primarily on south-facing slopes with shallow soils.



0 1000 2000
SCALE IN FEET
(APPROXIMATE)

LEGEND:

VEGETATION COMMUNITIES

- CMC Ceanothus Megacarpus Chaparral
- NG Non-native Grassland
- SAW Eriogonus Coastal Sage
- ECS Sycamore Alluvial Woodland (contains some Wetland Areas)

----- Sycamore Alluvial Woodland Riparian Corridor (contains some Wetland Areas)

————— Dirt Road

NOTE:


 FILL AREA

Figure 4.3-11 Rustic-Sullivan Canyon Landfill Vegetation Communities

Source:
McClelland Consultants, October 1989.

Table 4.3-18

Rustic-Sullivan Canyons
Communities, Subcommunities, and Dominant Species
Observed During Field Survey

Ceanothus megacarpus chaparral
Big pod ceanothus (Ceanothus megacarpus)

Sycamore alluvial woodland
Western sycamore (platanus racemosa)
Mulefat scrub
Southern willow scrub
Speedwell (veronica anagallis Var. aquatica)
San Diego bentgrass (agrostis diegoensis)

Erigonum coastal sage scrub
Interior buckwheat (erigonum fasciculatum)
Ripgut brome (bromus diandrus)

Nonnative grassland
Ripgut brome (bromus diandrus)
Native grasses
Beardless wild rye (elymus triticoides)

Mulefat scrub
mulefat (baccharis viminea)

Southern willow scrub
Arroyo willow (salix lasiolepis)

Source: McClelland Consultants, 1990.

Sycamore Alluvial Woodland. The sycamore alluvial woodland is dominated by western sycamore (Platanus racemosa) with subcommunities of mulefat scrub and southern willow scrub. This community is an open to moderately closed broadleafed riparian woodland with an extensive understory. The overall health of the sycamore alluvial woodland is good with a good mixture of age classes among the sycamores. Coast live oaks within this community in Rustic Canyon are generally in poor health because of galls and beetle damage. Recreational use from runners, hikers, and bicyclists is common, and horseback riding has caused trampling of understory vegetation within the sycamore alluvial woodland.

Erigonum Coastal Sage Scrub. The erigonum coastal sage scrub community is found as pockets within the ceanothus megacarpus chaparral community and is dominated by interior buckwheat (Erigonum fasciculatum). While this community is similar to other coastal sage communities in that it is dominated by interior buckwheat, this community has a lower diversity of plants.

Nonnative Grassland. Nonnative grassland habitat is found along the ridge road between Rustic and Sullivan Canyons. Although a few native grasses occur, primarily beardless wild rye (Elymus triticoides), the habitat is dominated by ripgut brome (Bromus diandrus) and other nonnative species.

Sensitive Species and Communities. Nevins brickellbush (Brickellia nevinii - CNPS List 4) was the only sensitive plant encountered in Rustic-Sullivan Canyons. This plant occurs in disturbed areas, such as road cuts and talus slopes.

Three sensitive communities occur within the study area. These include sycamore alluvial woodland, southern willow scrub, and mule fat scrub. The scrub communities are found within the sycamore alluvial woodland community. The abrupt change in vegetation from wetland to nonwetland is evident by the displacement of wetland components to ceanothus megacarpus chaparral.

Wetlands. Approximately 42 acres of jurisdictional wetlands occur within Rustic-Sullivan Canyons. Two wetland communities, southern willow scrub and mulefat scrub, occur as subcommunities within the sycamore alluvial woodland community. These wetland communities are located within a 200 to 400 foot-wide zone at the canyon bottom and narrower the side drainages. Two obligate wetland species were found that do not occur elsewhere within the study area.

As will be discussed later in this section, significant trees are found in the study area. These trees, western sycamore (Platanus racemosa) and coast live oak (Quercus agrifolia), occur only within the sycamore alluvial woodland.

Fauna. Fauna observed during the field surveys included mammals, birds, amphibians and reptiles, and butterflies. Each of these is discussed below along with a review of the sensitive wildlife and habitats encountered within the study area.

Mammals. Habitat conditions within the study area are of high value for small mammal use. Table 4.3-19 lists mammals that were observed during field surveys of Rustic-Sullivan Canyons.

Mule deer were active throughout these canyons and were present in every habitat. A variety of carnivorous mammals are present including mountain lion, bobcat, coyote, grey fox, and striped skunk, as evidenced by tracks identified in dry streambeds and fire roads. Although the dens or burrows of these animals were not found during the surveys, the presence of young animals indicates that suitable conditions are present for successful breeding to occur either within the study area or vicinity.

Table 4.3-19

**Rustic-Sullivan Canyons Mammals
Observed During Field Survey**

Mule deer
Western gray squirrels
Valley pocket gopher
Desert cottontail
California mouse
Western harvest mouse
California pocket mouse
Pacific kangaroo rat

Source: McClelland Consultants, 1990.

Birds. Rustic-Sullivan Canyons support a diverse avifauna population. Thirty-seven species were identified within these canyons, primarily in the sycamore alluvial woodland community, and are listed on Table 4.3-20. The large trees and other riparian vegetation provide shelter, foraging, and nesting habitat for many of the bird species. The high habitat quality present along the canyon bottoms is due primarily to the numerous vertical and horizontal niches available to a wide variety of birds.

Hunting habitat for raptors is limited on the slopes of both canyons due to the density of the vegetation, but is very good in the canyon bottoms as a result of the mixed sycamore/oak woodland and grassland composition. Nesting habitat for raptors is excellent in the bottom of both canyons, where numerous potential nest trees are provided by the sycamores and coast live oaks.

Table 4.3-20 Birds Observed in Rustic-Sullivan Canyons

Common name	Scientific name
Turkey vulture ^a	<u>Cathartes aura</u>
Sharp-shinned hawk ^a	<u>Accipiter striatus</u>
Cooper's hawk ^a	<u>Accipiter cooperii</u>
Red-shouldered hawk ^a	<u>Buteo lineatus</u>
Red-tailed hawk ^a	<u>Buteo jamaicensis</u>
American kestrel ^a	<u>Falco sparverius</u>
California quail	<u>Callipepla californica</u>
Mourning dove	<u>Zenaida macroura</u>
Great horned owl ^a	<u>Bubo virginianus</u>
Western screech owl ^a	<u>Otus kennicottii</u>
Common poorwill	<u>Phalaenoptilus nuttallii</u>
White-throat swift	<u>Aeronautes saxatalis</u>
Anna's hummingbird	<u>Calypte anna</u>
Northern flicker	<u>Colaptes auratus</u>
Downy woodpecker	<u>Picoides pubescens</u>
Ash-throated flycatcher	<u>Myiarchys cinerascens</u>
Western wood-pewee	<u>Contopus sordidulus</u>
Black phoebe	<u>Sayornis nigricans</u>
Dusky flycatcher	<u>Empidonax oberholseri</u>
Western flycatcher	<u>Empidonax difficilis</u>
Cliff swallow	<u>Hirundo pyrrhonota</u>
Scrub jay	<u>Aphelocoma coerulescens</u>
American crow	<u>Corvus brachyrhynchos</u>
Wrentit	<u>Chamaea fasciata</u>
Plain titmouse	<u>Parus inornatus</u>
Bushtit	<u>Psaltiriparus minimus</u>
Bewick's wren	<u>Thryomanes bewickii</u>
Canyon wren	<u>Catherpes mexicanus</u>
California thrasher	<u>Toxostoma redivivum</u>
Blue-gray gnatcatcher	<u>Polioptila caerulea</u>
Phainopepla	<u>Phainopepla nitens</u>
Rufous-sided towhee	<u>Pipilo erythrophthalmus</u>
Brown towhee	<u>Pipilo fuscus</u>
Song sparrow	<u>Melospiza melodia</u>
Rufous-crowned sparrow	<u>Aimophila ruficeps</u>
Brown-headed cowbird	<u>Molothrus ater</u>
Lesser goldfinch	<u>Carduelis psaltria</u>
House finch	<u>Carpodacus mexicanus</u>

^aSensitive species.

^bSpecies observed (or presence identified by sign) during spring/summer 1989 surveys.

Source: McClelland Consultants, 1990.

Amphibians and Reptiles. Although a small intermittent stream is present within Sullivan Canyon, no amphibians were found in either canyon during the surveys.

The most common reptile found during the survey was the western fence lizard. Other lizards identified were side-blotched lizard and western whiptail. Snakes encountered within these canyons were the western rattlesnake and California striped racer. Suitable habitat also exists for the gopher and common kingsnake; however, these species were not observed during the surveys.

Butterflies. Habitat conditions within the study area of Rustic-Sullivan Canyons are of high value for butterfly use. The combination of a high diversity of food plants for many adult species, host plants necessary for larval development, and surface water provide for a community that can be expected to be used by numerous butterfly species. The total number of butterfly species observed or collected during the field survey was less than expected due to the ongoing drought, restricted collecting time, and extremely warm temperatures during the survey.

Sensitive Wildlife and Habitats. The sycamore alluvial woodland habitat is designated as an area of critical habitat, as indicated on Figure 4.3-12. Two vegetational communities, the erigonum coastal sage and nonnative grasslands, have been identified as potential high use areas. The erigonum coastal sage community produces an abundance of seed used as an important food source. Areas of nonnative grasslands provide suitable habitat for browsing deer, foraging raptors, and mountain lions. Badgers can den and hunt for pocket gophers and other rodents in this community.

The yellow warbler and yellow-breasted chat had previously been reported as occurring in the canyons.¹¹⁵ If present, these migratory birds had already moved out of the area by the time of this survey. The yellow warbler had also been reported as nesting within riparian areas of these canyons, but was not found at the time of this survey.¹¹⁵

One juvenile Cooper's hawk was seen on a limb of a sycamore tree. This observation indicates successful breeding by a Cooper's hawk in Rustic Canyon and is of special interest due to its listing as a species of special concern by the CDF&G.

The monarch butterfly is the only sensitive butterfly species observed in Rustic-Sullivan Canyons. The food plant (milkweed) for monarch butterfly larvae is present in several of the habitats.

Impacts and Mitigation Measures

Development of the potential Mission-Rustic-Sullivan Landfill Complex could cause potential impacts to the flora and fauna of the area. These impacts and mitigation measures are described below.

Flora. The communities of greatest sensitivity in Mission Canyon are also the riparian/wetland communities (southern coast live oak riparian forest) and California walnut woodland. Erigonum coastal sage scrub, although not considered a sensitive plant community, provides valuable wildlife habitat to sensitive species potentially occurring on-site as discussed in the next section. The communities of greatest sensitivity in Rustic Canyon are the riparian/wetland communities (sycamore alluvial woodland) and its subcommunity, southern willow scrub. Tables 4.3-21 and 4.3-22 present the approximate acreage that would be removed by the development of the potential Mission-Rustic-Sullivan Canyons Landfill Complex, and the required mitigation acreages based on restoration ratios of 3:1 for sensitive communities and significant trees.

Sensitive Species. No sensitive plant species were found at Mission Canyon. Therefore, no impacts are expected and no mitigations are necessary.

Nevin's brickellbush (Brickellia nevinii) was found in Rustic-Sullivan Canyons along existing roadways adjacent to chaparral and coastal sage communities and sporadically in the sycamore alluvial woodland. Because of the scattered distribution of this plant, the exact acreage present in the fill area is unknown. Development of the potential landfill would remove at least some of this population. The loss of these plants would be a significant adverse environmental impact that could be easily mitigated by reseeding and/or transplanting into undisturbed areas. This measure would be sufficient to reduce the impact to a less than significant level.

Sensitive Communities. The sycamore alluvial woodland and its subcommunities southern willow scrub and mulefat scrub are found in both Rustic and Sullivan Canyons. Two significant tree species occur in these communities: western sycamore and coast live oak. Several of the coast live oak in Rustic Canyon are in poor health; while in Sullivan Canyon the oaks are in good health. The western sycamores, which dominate both





LEGEND:

IMPORTANT WILDLIFE HABITATS

-  Sensitive Habitat Areas
-  Potential High Wildlife Use Areas
-  Major Wildlife Movement Patterns

VEGETATION COMMUNITIES

- CMC** Ceanothus Megacarpus Chaparral
- NG** Non-native Grassland
- SAW** Eriogonum Coastal Sage
- ECS** Sycamore Alluvial Woodland (contains some Wetland Areas)
-  Sycamore Alluvial Woodland Riparian Corridor (contains some Wetland Areas)
-  Dirt Road

NOTE:

-  FILL AREA

Figure 4.3-12 Rustic-Sullivan Canyon Landfill Important Wildlife Habitats

canyons, are in good health. The development of the landfill as proposed would result in the loss of approximately 112 acres of sycamore alluvial woodland and approximately 478 trees (75 coast live oaks, 403 western sycamores).

Table 4.3-21 Mission Canyon Landfill Potential Impact on Flora Acreage

<u>Plant community^a</u>	<u>Total study area acreage</u>	<u>Landfill impact acreage</u>	<u>Restoration acreage needed^b</u>
Ceanothus megacarpus chaparral	279	185	0
Reclaimed	91	25	0
Diegan coastal sage	55	20	0
Nonnative grassland	10	10	0
Urban	9	8	0
Southern coast live oak riparian forest ^c	6	6	18
California walnut woodland	5	5	15
Mixed riparian ^d	<u>0.6</u>	<u>0.6</u>	<u>2</u>
Total	455.6	259.6	35

^aSee Figure 4.3-10 for location of plant communities.

^bSensitive communities only.

^cIncludes approximately 6 acres of jurisdictional wetlands.

^dIncludes approximately 0.6 acres of jurisdictional wetlands.

Source: McClelland Consultants, 1990.

Given restoration ratios of 3:1 for sycamore alluvial woodland and significant trees, approximately 336 acres and 1,434 trees (225 coast live oaks, 1,209 sycamores) would be needed to offset this impact. The loss of the sycamore alluvial woodland would be a significant unavoidable impact that cannot be fully mitigated within the property boundary due to the lack of suitable habitat. Although some habitats may be suitable for expansion (such as along the perimeter of the existing sycamore alluvial woodlands) in the southwest portion of Sullivan Canyon and the northwest portion of Rustic Canyon, additional mitigation acreage would be required outside of the property boundary. The potential numbers of trees loss/replaced are presented in Table 4.3-23.

Table 4.3-22 Rustic-Sullivan Canyons Landfill Potential Impact
On Sensitive Flora Acreage

Plant community ^a	Total study area acreage	Landfill impact acreage	Access road impact acreage	Total impact acreage	Restoration acreage needed ^b
Ceanothus megacarpus chaparral	2,164	555	91	646	0
Sycamore alluvial woodland	317	79 ^d	0	79	237
Eriogonum coastal sage	297	112	0	112	0
Nonnative grassland	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	2,779	746	91	837	237

^aSee Figure 4.3-11 for location of plant communities.

^bSensitive communities only.

^cIncludes approximately 42 acres of jurisdictional wetlands.

^dIncludes approximately 11 acres of jurisdictional wetlands.

Source: McClelland Consultants, 1990.

Table 4.3-23
Rustic-Sullivan Tree Loss/Replacement

<u>Significant trees</u>	<u>Removed existing total</u>	<u>by project</u>	<u>Total replaced at 3:1</u>	<u>after project</u>
Coast live oak	209	75	225	359
Western sycamore	<u>1,120</u>	<u>403</u>	<u>1,209</u>	<u>1,926</u>
Total	1,329	478	1,434	2,285

Source: McClelland Consultants, 1990.

The development of the landfill as proposed would also result in the loss of approximately 6 acres of southern coast live oak riparian forest and 0.6 acres of mixed riparian vegetation including wetlands. The loss of these communities would be an unavoidable impact that cannot be mitigated within the property boundary due to lack of suitable habitat.

Approximately 5 acres of California walnut woodland would be lost as a result of the development of the potential landfill. This would be a significant unavoidable impact that cannot be feasibly mitigated within the property boundaries due to the lack of suitable mitigation sites.

Approximately 11 acres of jurisdictional wetlands in Rustic-Sullivan Canyons would be removed due to grading and construction of the proposed landfill. These acres occur within mulefat scrub and southern willow scrub, communities which are subcommunities within sycamore alluvial woodland communities. The loss of these communities would be a significant impact that could be mitigated by in kind enlargement or enhancement of existing wetlands or the excavation of wetland communities from upland communities on the project site at a minimum ratio of 1:1. Additional requirements may be imposed by the Army Corp of Engineers or the CDF&G.

The loss of these communities is judged to be a significant unavoidable impact that cannot be fully mitigated within the project boundary due to the lack of suitable replacement habitat. Wetland communities cannot be restored on the closed landfill areas. Locations and types of off-site wetland restoration are subject to determination by the CDF&G during the permit process for Section 404 (CFR Title 33) and Section 1603 (CDFG Code, Chapter 6).

Table 4.3-23 summarizes the removal and restoration numbers for significant trees impacted by the development of a landfill in the Rustic-Sullivan Canyons. The loss of 478 significant trees would be a significant unavoidable impact that could not be mitigated to less than significant levels on site due to the lack of sufficient suitable habitat.

Other Communities. The ceanothus megacarpus chaparral community is common throughout the study area of Mission/Rustic-Sullivan Canyons, as well as throughout southern California. Removal of this community would result in a less than significant impact.

The loss of approximately 79 acres of the erigonum coastal sage scrub community found within the chaparral community at Rustic-Sullivan Canyons would be a significant impact because of the value of this community as wildlife habitat. The native grasses that would be affected by the development of the potential landfill would be a significant impact that could be mitigated to less than significant levels through revegetation.

The loss of surface and/or groundwater due to the development of the potential Mission-Rustic-Sullivan Canyons Landfill Complex could result in the loss of vigor and cause changes in the species composition of vegetational communities, specifically sycamore alluvial woodlands and other riparian/wetland communities located downstream of the proposed fill areas. Impacts to off-site communities should be reduced because the proposed fill area within Rustic Canyon does not extend down the length of the canyon, and a large portion of the Sullivan Canyon watershed would remain undisturbed. The significant impacts from the loss of surface and/or groundwater could be feasibly mitigated to less than significant levels by releasing seasonal rainfall from detention basins gradually during the growing season of riparian communities. This measure may require design of detention basins to accommodate this flow.

Fauna. Removal of the sycamore alluvial woodland in Rustic-Sullivan Canyons as previously described would remove critical wildlife use areas. This area includes a large portion of important raptor nesting and wintering habitat found in the study area. Additionally, this area provides valuable foraging habitat on site for large mammals including deer, mountain lion, and coyote. The loss of 746 acres of this community would be an unavoidable significant impact that cannot be mitigated due to the lack of sufficient suitable habitat within the property boundaries.

The erigonum coastal sage scrub community provides important foraging habitat for a wide range of wildlife. The loss of 79 acres of this community could be mitigated such that there is no net loss through revegetation of this community on a 1:1 basis on the closed landfill. The ceanothus oliganthus chaparral community is regionally abundant and low in wildlife use and value; therefore, the loss of this community would be less than significant. The potential Mission Canyon Landfill is composed primarily of this community, and the loss of approximately 185 acres of ceanothus oliganthus chaparral would be an insignificant impact.

The Diegan coastal sage and nonnative grassland areas are potential high use areas, but because of the low acreage that would be lost and the large amount of undisturbed acreage that would be retained on site and in the vicinity, the loss of 20 acres of Diegan coastal sage and 10 acres of nonnative grassland in Mission Canyon would be insignificant.

Although disturbed, the riparian and woodland communities located within the Mission Canyon potential fill area provide critical wildlife use areas that are scarce on a regional level. The loss of these communities would cause significant adverse impacts to local wildlife that cannot be mitigated on site.

The study area of Rustic-Sullivan Canyon is located within and encompasses approximately one-half of the existing area of SEA 11, which was designated in part to provide a corridor for gene flow and species movement between the Santa Monica and San Gabriel Mountains via the Hollywood Hills, Griffith Park, and the Verdugo Mountains.¹¹⁴ The northernmost boundaries are adjacent to the southern boundaries of SEA 39 containing the Encino Reservoir and its freshwater habitats, which provide regionally important wildlife resources.

Given the proposed fill boundaries, a major movement pathway along the bottom of Sullivan Canyon would be unavoidably lost, resulting in an unavoidable significant impact to local and regional wildlife. Another major movement pathway that would be adversely affected by landfill development is located between Rustic and Sullivan Canyons. This corridor lies outside of the proposed fill areas, along a ridgeline fire road that separates Rustic and Sullivan Canyons. The loss of this corridor would result in a significant adverse impact to local wildlife movement. These impacts cannot be mitigated to less than significant levels. On a regional scale, these impacts would be significant, adding to the incremental fragmentation of regional wildlife movement corridors.

Because of the urbanization that surrounds Mission Canyon, particularly the I-405 Freeway directly east of the site, this canyon has become isolated from most regional terrestrial animal movement. No significant impacts to wildlife corridors would be expected from potential landfilling activities in the Mission Canyon portion of this complex.

Unavoidable Impacts

The following unavoidable significant impacts have been identified for Mission-Rustic-Sullivan Canyons, after incorporation of all feasible mitigation measures:

- Loss of approximately 91 acres of southern willow scrub/sycamore · alluvial woodland, California walnut woodland, southern coast live oak riparian forest, and mixed riparian.
- Loss of local and regional wildlife movement corridors, during the operating life of site.
- Removal of the landfill area from SEA 11.

4.3.6 Cumulative Impact Assessment

Potential cumulative impacts to biological resources due to the simultaneous operation of one or more of the potential sites includes loss of regional wildlife corridors, associated with the removal of SEA designation, during the operating life of the landfills. Mitigation measures as previously discussed include enhancement of areas that may be suitable for movement areas. Mitigation measures would reduce but not eliminate the adverse impact of a net loss of SEA designation.

Combined loss of oak trees, riparian/wetlands habitat, native grasslands and other foraging habitats would be regionally significant, but could be reduced to insignificant in the long term if previously described mitigation measures are utilized.

4.4 TRAFFIC

The purpose of this section is to identify and quantify the traffic impacts of potential landfill sites proposed by the Sanitation Districts and the County. Three sites have been identified for analysis: Blind Canyon, Towsley Canyon, and Mission-Rustic-Sullivan Canyons. The Elsmere Canyon site is included in this analysis for the purpose of assessing only the impacts of cumulative traffic. A separate environmental impact report (EIR)/environmental impact statement (EIS) will be prepared for the site under the direction of the County Department of Regional Planning and the U.S. Forest Service.

The impact of the proposed landfill operations on the adjoining street network is identified in this section. Traffic volumes and anticipated levels of service for existing conditions and for the design year are quantified. Mitigation measures to reduce the impacts of the operation of the landfill sites are identified where appropriate. The impact of combined operations is also examined to determine if operation of one or more sites will have any impact on the street system. The traffic technical report was prepared by DKS Associates.

4.4.1 Waste Diversion

The proposed Integrated System consists of waste diversion programs such as source reduction, curbside collection of residential recyclables, and commercial recycling. Clearly, source reduction programs will result in fewer vehicle trips generated due to the reduction in refuse collection trips. Regionally, this will result in an associated reduction in vehicle trips to disposal facilities. However, the impact upon traffic at a given landfill is difficult to quantify due to a number of factors such as daily disposal capacity, tipping fees, and proximity of sites. To illustrate the relationship between these factors, waste diversion, and traffic at landfills, the following example is provided. If a hauler picks up less refuse due to greater source reduction, fewer trips to the disposal site normally used would be made, thereby making more disposal capacity available at the site for other customers. The other customers may or may not utilize the capacity depending on the distance of the site and the tipping fee in comparison to other available disposal facilities. Additionally, curbside collection programs and commercial recycling programs would reduce countywide trips to landfills but may increase overall vehicle miles traveled due to separate collection trips and trips to redemption, buy-back, or processing facilities.

4.4.2 Issues Common to All Landfills

The analysis methodology and consideration of alternate access plans are common to all potential landfill and are discussed below.

Analysis Methodology

The analysis methodology which was used for this study involves quantifying existing conditions at each of the sites. The traffic analysis was prepared in accordance with the guidelines for preparing traffic impact studies as described in the "Traffic Access Guidelines, County of Los Angeles Department of Traffic and Lighting, August 1989. Existing traffic volumes and levels of service were identified. Existing traffic patterns were reviewed in order to determine their applicability to existing conditions. The design year for the project was selected as 2013, 20 years after initial site operations would be scheduled to begin. Future traffic volumes and levels of service (LOS) were quantified based on known or projected changes in the highway network, land use patterns, and traffic patterns for conditions without the project. Project traffic was added to the future year conditions in order to quantify future year conditions. The study intersections were analyzed by calculating the volume-to-capacity (V/C) ratio of each intersection. This ratio, and the associated LOS, qualitatively measure the operating characteristics at an intersection. LOS A represents free flow conditions while LOS F represents forced flow.

Existing Conditions. In order to assess the potential impacts of the operation of landfills at the potential sites, it was necessary to develop baseline information to aid in the assessment. Access to each site was studied to determine which roadways would likely be impacted as a result of project operations. Thus, an analysis network for each site was established. Existing traffic volume information was developed during June, July, and August 1989 to reflect current conditions. Manual turning counts at identified intersections were conducted during morning and afternoon peak periods. Twenty-four-hour tube counts were conducted at selected midblock locations. Volumes along freeway routes were obtained from the latest Caltrans count information (1987).

Design Year Base Conditions. Design year conditions (2013) were estimated for several cases in order to assess the impacts of the proposed site operations. Background or ambient traffic growth was estimated by applying a 2 percent per year growth rate. This background growth rate reflects the normal growth in traffic, as well as taking into account some anticipated growth in land use in the surrounding area. It was determined by consultation with County staff.

Design Year Conditions With Project. Two operational scenarios were analyzed for each site to give a range of potential environmental impacts to be analyzed. The first scenario involves the disposal of 2,000 tons per day (TPD) of waste for each site. The second scenario involves the disposal of 16,500 TPD for each site. Due to the nature of this study, it was decided to study each site independently (i.e., operating as stand-alone sites). In addition, because of their relative proximity to one another, the use of Towsley Canyon and Elsmere Canyons operating concurrently was studied. Elsmere is only included for the purpose of assessing potential cumulative impacts. The discussion of the impacts of this joint operation pertain only to the freeway system. The geographic locations, highway system, and potential waste shed for the other candidate landfill sites would not significantly impact the analysis should all or any operate coincidentally. Traffic generated by these two operational scenarios was added to ambient growth in order to obtain the design year conditions with each specified potential landfill.

Design Year Cumulative Conditions With Project. The impact of cumulative projects upon ambient growth and the two project scenarios was also analyzed. A list of projects proposed for future development within a 2-mile radius of the project site was gathered from city and County files. Trip generation rates from the Institute of Transportation Engineers "Trip Generation Manual (4th Edition)" were used to estimate the trips generated by each land use. These trips were added to ambient growth and each of the project scenarios to estimate the 2013 cumulative conditions.

Alternate Access Plan

After a preliminary study, it was decided that only the Towsley Canyon site would be analyzed with an alternate access. The alternate access to this site is proposed as a direct exit and entry ramp from I-5 to the access roadway to the site. This alternate access would require Caltrans approval. The details and analysis of this alternate are discussed in Section 4.4.4.

The County has established that midrange Level D or volume-to-capacity ratio of 0.85 is the point beyond which mitigation measures are required.¹¹⁸ Those intersections which are forecast to be significantly impacted after the addition of project traffic are analyzed for potential mitigation measures. The proposed measures would mitigate the intersections to 0.85 or better.

4.4.3 Blind Canyon

This site is located in the Santa Susana Mountains north of the San Fernando Freeway (State Route 118) at the Rocky Peak Road exit. Access to the site would be via SR-118 to Rocky Peak Road exit. Access from the interchange area would be provided by construction of an access road north from the interchange (see Figure 4.4-1).

Setting

The network chosen for detailed analysis for this site includes both SR-118 Freeway ramps at Rocky Peak Road and the intersection of Rocky Peak Road with Santa Susana Pass Road.

Existing Conditions. The existing street network was analyzed using traffic volumes obtained during the summer of 1989. Table 4.4-1 summarizes the morning and afternoon peak period V/C ratios and corresponding LOS for the three study intersections. All of the existing study intersections currently operate at LOS A during the peak periods.

Design Year Base Conditions. Traffic volumes in the year 2013 were developed by applying a 2 percent per year ambient growth rate to account for historical traffic growth and for unknown intensification in land uses. For the purpose of this analysis, it was assumed that the half-diamond interchange at Rocky Peak Road would be improved to a full diamond, as proposed by others, providing access to and from the west.

Table 4.4-1 illustrates the V/C ratios and LOS for the study intersections for both the morning and afternoon peak periods in the year 2013. All of the study intersections will operate at LOS A or better.

Impacts

Design Year Base Conditions With Potential Blind Canyon Landfill. Two waste stream scenarios were analyzed for the design year (2013) conditions with the project:

- **2,000 TPD** - This scenario involves the disposal of 2,000 TPD of waste. Approximately 286 waste disposal trucks (average 7 tons/truck) per day would arrive at the project site. Additionally, 30 persons would be employed at the site.
- **16,500 TPD** - This scenario involves the disposal of 16,500 TPD of waste. Approximately 2,357 trucks (average 7 tons/truck) would arrive at the site per day. Additionally, approximately 150 would be employed at the site.

* **PROJECT SITE**



NO SCALE



LEGEND

● STUDY INTERSECTION

Source: DKS Associates, 1990.

Figure 4.4-1 Access to the Potential Blind Canyon Landfill Site

Table 4.4-1 Traffic Impacts at Intersections Near the Potential Blind Canyon Landfill Site

Intersection ^a	Baseline conditions								Impacts in 2013							
	Existing				2013				2000 TPD				16,500 TPD			
	AM		PM		AM		PM		AM		PM		AM		PM	
	V/C ^b	LOS ^c	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
Rocky Peak at westbound ramp	0.07	A	0.05	A	0.11	A	0.07	A	0.13	A	0.10	A	0.27	A	0.29	A
Rocky Peak at eastbound ramp	0.16	A	0.05	A	0.25	A	0.08	A	0.28	A	0.11	A	0.44	A	0.29	A
Rocky Peak at Santa Susana Pass	0.27	A	0.11	A	0.43	A	0.18	A	0.45	A	0.19	A	0.54	A	0.29	A

^aSee Figure 4.4-1 for location of intersections.

^bV/C = Volume-to-capacity ratio.

^cLOS = Level of service.

Note: All intersections assumed signalized for this analysis.

Source: DKS Associates, 1990.

Trips generated by operation of the landfill site were assigned to the roadway network and traffic volumes were added to the base conditions for both scenarios.

The projected V/C ratios and LOS for both waste stream scenarios are also shown in Table 4.4-1. Traffic volumes would increase in the project area as a result of the potential landfill project. However, no significant impacts are anticipated. While the LOS would be slightly decreased at study locations, all intersections would operate at LOS A. Traffic volumes on SR-118 would increase by about 0.2 percent for 2,000 TPD and by about 1.8 percent for 16,500 TPD over the anticipated 2,013 volumes without the project. The additional truck traffic along the SR-118 approach to the Rocky Peak Road off-ramp would result in only a slight degradation of the level of service on the freeway. Therefore, no mitigation measures are required.

Design Year Cumulative Conditions With Potential Blind Canyon Landfill. The cumulative projects identified within an approximate 2-mile radius of the landfill site are proposed park acquisitions, with the exception of the proposed Indian Wells development to the east of the site (see Section 4.1). Proposed freeway access to Indian Wells would be via an extension of Topanga Canyon Boulevard and, thus, all of the proposed projects, including Indian Wells are expected to generate little or no traffic at the Rocky Peak Road interchange. As a result, the traffic impact analysis would remain unchanged from cases documented above.

Mitigation Measures

None of the study intersections are projected to be significantly impacted by the addition of traffic with either the 2,000 or 16,500 TPD waste stream scenarios to ambient growth. Thus, no mitigation measures are required.

Unavoidable Impacts

None.

4.4.4 Towsley Canyon

This site is located west of The Old Road in an unincorporated area of the County just west of the City of Santa Clarita (see Figure 4.4-2). Access to the site would be via the Golden State Freeway (I-5) to the Calgrove Boulevard exit and then westerly along Calgrove Boulevard from the interchange. Calgrove Boulevard would be extended west of The Old Road as McBean Parkway. The County Department of Public Works (DPW) has developed a master plan for a roadway network in the

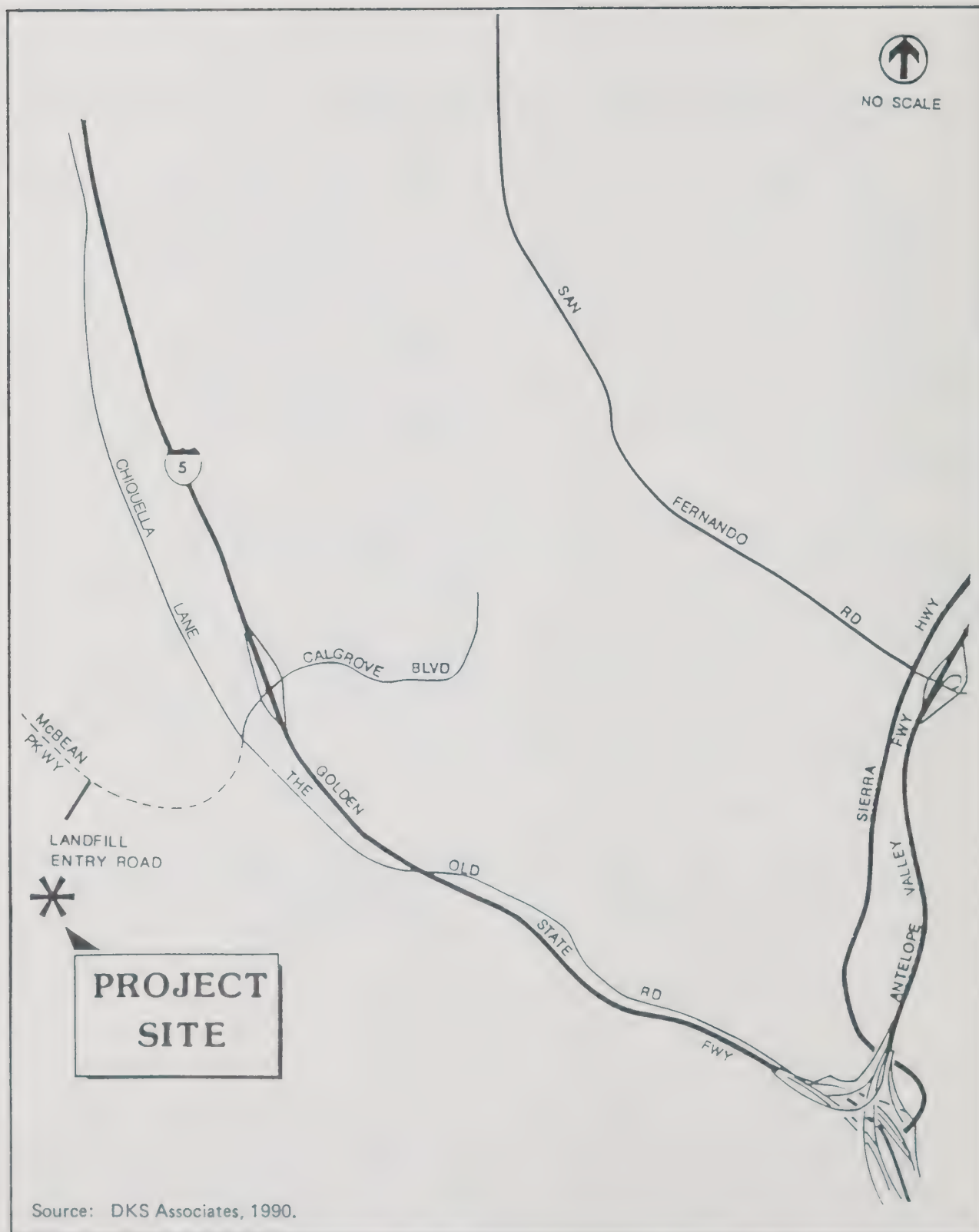


Figure 4.4-2 Access to the Potential Towsley Canyon Landfill Site

project area. This plan calls for the Calgrove Boulevard/McBean Parkway extension to loop with Pico Canyon Road.

Setting

The network chosen for analysis of existing conditions includes:

- Calgrove Boulevard at The Old Road
- Calgrove Boulevard at I-5 south ramp
- Calgrove Boulevard at I-5 north ramp

The network chosen for detailed analysis for this site includes four intersections in the future:

- McBean Parkway at landfill entry road
- Calgrove Boulevard McBean Parkway at The Old Road
- Calgrove Boulevard at I-5 south ramp
- Calgrove Boulevard at I-5 north ramp

Traffic destined for the landfill would use the Calgrove Boulevard ramp from I-5 to an access from the proposed alignment of McBean Parkway located west of The Old Road at the McBean Parkway/Calgrove Boulevard intersection. This alternative cannot be analyzed for existing conditions since it does not exist at this time.

Existing Conditions. The existing street network was analyzed using traffic volumes obtained during the summer of 1989. Table 4.4-2 summarizes the morning and afternoon peak period V/C ratios and corresponding LOS for the three study intersections. All intersections are currently unsignalized. Analysis of the operations at the unsignalized intersections indicates that all movements operate at LOS C or better with the exception of left turns from the two freeway ramps which operate at LOS D.

Design Year Base Conditions. Traffic volumes in the year 2013 were developed by applying a 2 percent per year ambient growth rate to account for historical traffic growth and for unknown intensification in land uses.

For the purpose of this analysis, it was assumed that McBean Parkway would be completed and that access to the site is located on McBean Parkway west of The Old Road. All study intersections are assumed to be signalized.

Capacity calculations were conducted for 2013 base conditions. Table 4.4-2 also illustrates the V/C ratios and LOS for the study intersections for both the morning and

Table 4.4-2 Traffic Impacts at Intersections Near the Potential Towsley Canyon Landfill Site

	Baseline conditions				Project impacts in 2013								Cumulative impacts in 2013			
	Existing		2013		2,000 TPD		16,500 TPD		2,000 TPD		16,500 TPD		2,000 TPD		16,500 TPD	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Intersection ^a	V/C ^b	LOS ^c	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
Calgrove at I-5 southbound	--	D ^d	--	C ^d	0.66	B	0.47	A	0.65	B	0.48	A	0.59	A	0.62	B
Calgrove at I-5 northbound	--	C ^d	--	D ^d	0.54	A	0.72	C	0.58	A	0.72	C	0.68	B	0.73	C
Calgrove at Old Road	N/A	B ^d	N/A	C ^d	0.43	A	0.30	A	0.44	A	0.32	A	0.51	A	0.42	A
McBean at Access	N/A	N/A	N/A	N/A	0.26	A	0.71	C	0.26	A	0.72	C	0.33	A	0.79	C
Calgrove at Chiquella	--	B ^d	--	C ^d												

^aSee Figure 4.4-2 for location of intersections.^bV/C = Volume-to-capacity ratio.^cLOS = Level of service.^dUnsignalized.

Source: DKS Associates, 1990

afternoon peak periods. All of the study intersections are projected to operate at LOS C or better during both peak periods.

Impacts and Mitigation Measures

Design Year Base Conditions With Potential Towsley Canyon Landfill. Two waste stream scenarios were analyzed for the design year (2013) conditions with the project.

- **2,000 TPD** - This scenario involves the disposal of 2,000 TPD of waste. Approximately 286 waste disposal trucks (average 7 tons/truck) per day would arrive at the project site. Additionally, 30 persons would be employed at the site.
- **16,500 TPD** - This scenario involves the disposal of 16,500 TPD of waste. Approximately 2,357 trucks (average 7 tons/truck) would arrive at the site per day. Additionally, 150 persons would be employed at the site.

Trips generated by operation of the landfill site were assigned to the roadway network and traffic volumes were added to the base conditions for both scenarios.

Impacts. The projected V/C ratios and LOS for both waste stream scenarios are also presented in Table 4.4-2. The potential Towsley Canyon Landfill project would cause an increase in traffic on roadways within the project area. In addition, traffic volumes on I-5 Freeway would be increased in both directions. The operational characteristics of refuse trucks would cause some decrease in capacity as the percentage of trucks increase in the traffic stream on the freeway. However, with 2,000 TPD and 16,500 TPD, no mitigation measures are anticipated to be necessary since the increase in traffic due to the project would be 0.31 percent for the 2,000-TPD scenario and 2.38 percent for the 16,500-TPD scenario.

If an exclusive set of ramps is constructed from the I-5 Freeway to the landfill access road. The impact of this action will be similar to the 2013 conditions without the project on the local street system.

Mitigation Measures. None of the study intersections are projected to be significantly impacted by the addition of traffic with either the 2,000 or 16,500 TPD waste stream scenarios to ambient growth. Thus, no mitigation measures are necessary.

Design Year Cumulative With Potential Towsley Canyon Landfill. In order to assess potential cumulative impacts, cumulative trips were added to the two project waste stream scenarios and background growth. The cumulative traffic was calculated from the list of approved projects (see Table 4.1-4).

Cumulative Growth Impacts. The results of the cumulative impact analysis due to cumulative growth is presented in Table 4.4-2. After the addition of cumulative traffic to the traffic associated with the 2,000-TPD waste stream scenario, two of the intersections are forecast to operate at LOS C or better. The intersection of Calgrove Boulevard at I-5 southbound ramps is expected to operate at a V/C of 1.06 (LOS F) during the PM peak period while the intersection of Calgrove Boulevard at I-5 northbound ramps is projected to operate at a V/C of 1.13 (LOS F) during the PM peak period.

After cumulative traffic is added to the traffic associated with the 16,500-TPD waste stream scenario, three of the study intersections are projected to operate below LOS C during the PM peak period. The intersection of McBean Parkway at the site access is forecast to operate at 0.83 (LOS D) during the PM peak period. The intersection of Calgrove Boulevard at I-5 southbound ramps is forecast to operate at 1.23 (LOS F) during the PM peak period. The intersection of Calgrove Boulevard at I-5 southbound ramps is forecast to operate at 1.23 (LOS F) during the pm peak period. The intersection of Calgrove Boulevard at I-5 northbound ramps is expected to operate at a V/C of 0.88 (LOS D) during the AM peak period and 1.20 (LOS F) during the PM peak period.

Mitigation Measures. The addition of cumulative traffic from proposed projects to ambient growth and the two project scenarios causes two intersections to become significantly impacted. Mitigation measures for the impacted intersections are presented below:

- Calgrove Boulevard at I-5 Southbound Ramps - Prohibit PM peak hour parking on Calgrove Boulevard. This will allow for two additional travel lanes. This would reduce the V/C ratio under Project Scenario 1 to 0.74 (LOS C). For Scenario 2, the prohibition of PM peak hour parking would allow for an additional travel lane in the westbound direction and a shared through/right lane in the eastbound direction. An additional eastbound right-turn lane would lower the V/C to 0.72 (LOS C).

- **Calgrove Boulevard at I-5 Northbound Ramps** - Prohibit PM peak hour parking on Calgrove Boulevard, allowing an eastbound shared left/through lane and a westbound/through lane. This would reduce the PM V/C ratio under project Scenario 1 to 0.81 (LOS D). For project Scenario 2, prohibiting PM peak hour parking would allow an additional through lane in the westbound direction and a shared left/through lane in the eastbound direction. A westbound right-turn lane would also be necessary to lower the V/C to 0.62 (LOS B) in the AM and 0.85 (LOS D) in the PM.

Unavoidable Impacts

None.

4.4.5 Mission-Rustic-Sullivan Canyons

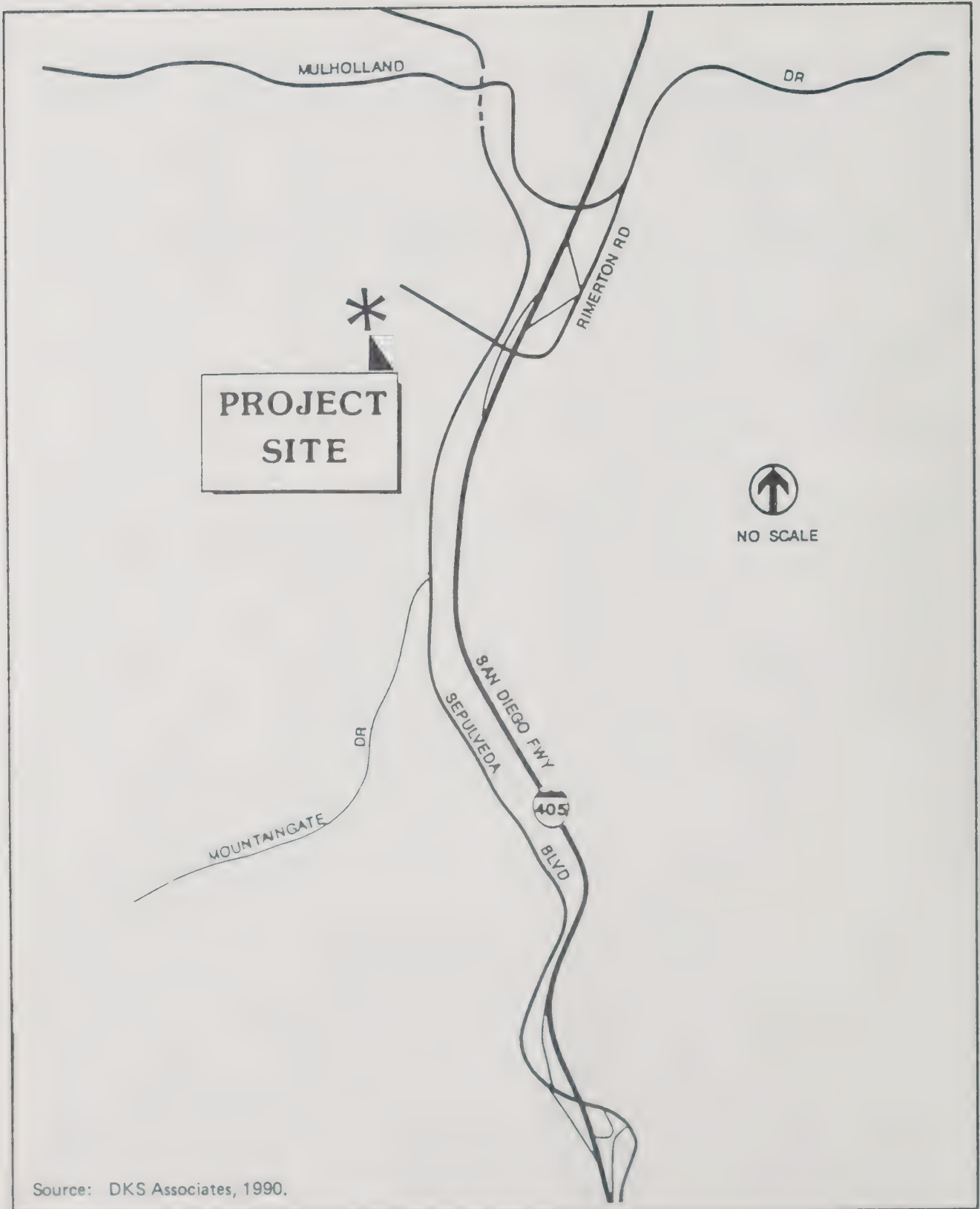
This site is located in the City of Los Angeles west of the San Diego Freeway (I-405) and Sepulveda Boulevard in the Santa Monica Mountains (see Figure 4.4-3). Access to the site would be via the San Diego Freeway (I-405) at the Rimerton Road exit.

Setting

The network chosen for detailed analysis for this site includes seven intersections:

- Rimerton Road at Northbound I-405 ramp
- Rimerton Road at Southbound I-405 ramp
- Rimerton Road at Sepulveda Boulevard
- Sepulveda Boulevard at Mountaingate Drive
- Sepulveda Boulevard at Southbound I-405 ramp
- Sepulveda Boulevard at Northbound I-405 off-ramp
- Sepulveda Boulevard at Northbound I-405 on-ramp

Existing Conditions. The existing street network was analyzed using traffic volumes obtained during the summer of 1989. Table 4.4-3 summarizes the morning and afternoon peak period V/C ratios and corresponding LOS for the seven study intersections. LOS calculations show that several of the study intersections currently operate at LOS in the D and E range ($V/C > 0.8$). The intersections operating in the LOS D range include Rimerton Road at Sepulveda Boulevard during the morning peak period ($V/C = 0.85$), I-405 southbound off-ramp at Sepulveda Boulevard during the morning peak ($V/C = 0.82$), and I-405 northbound off-ramp at Sepulveda Boulevard during the afternoon peak ($V/C = 0.82$). The intersection of Mountaingate Drive at Sepulveda Boulevard operates in the LOS E range during



Source: DKS Associates, 1990.

Figure 4.4-3 Access to the Potential Mission-Rustic-Sullivan Canyons Landfill Complex

**Table 4.4-3 Traffic Impacts at Intersections Near the Potential
Mission-Rustic-Sullivan Canyons Landfill Complex**

Intersection ^a	Baseline conditions								Project impacts in 2013								Cumulative impacts in 2013							
	Existing				2013				2000 TPD				16,500 TPD				2000 TPD				16,500 TPD			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	V/C ^b	LOS ^c	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
Rimerton at I-405 northbound (NB)	0.40	A	0.45	A	0.64	B	0.71	C	0.65	B	0.71	C	0.70	C	0.76	C	0.65	B	0.73	C	0.70	C	0.78	C
Rimerton at I-405 southbound (SB)	0.63	B	0.44	A	1.02	F	0.71	C	1.03	F	0.71	C	1.11	F	0.75	C	1.09	F	0.73	C	1.16	F	0.77	C
Rimerton at Sepulveda	0.85	D	0.77	C	1.37	F	1.24	F	1.41	F	1.27	F	1.67	F	1.42	F	1.52	F	1.41	F	1.78	F	1.57	F
Sepulveda at Mountain-gate	0.91	E	0.66	B	1.46	F	1.08	F	1.46	F	1.08	F	1.50	F	1.12	F	1.79	F	1.21	F	1.82	F	1.25	F
Sepulveda at I-405 SB	0.82	D	0.65	B	1.33	F	1.04	F	1.33	F	1.05	F	1.37	F	1.08	F	1.57	F	1.31	F	1.61	F	1.35	F
Sepulveda at I-405 NB off	0.77	C	0.82	D	1.25	F	1.32	F	1.25	F	1.33	F	1.30	F	1.36	F	1.45	F	1.52	F	1.49	F	1.55	F
Sepulveda at I-405 NB on	--	D	--	A	--	D	--	F	--	D	--	F	--	D	--	F	--	D	--	F	--	D	--	F

^aSee Figure 4.4-3 for location of intersections.

^bV/C = Volume-to-capacity ratio

^cLOS = Level of service

Source: DKS Associates, 1990.

the morning peak period ($V/C = 0.91$) The northbound left movement at Sepulveda Boulevard at I-405 northbound on-ramp operates at LOS D during the AM peak period.

Design Year Base Conditions. Traffic volumes in the year 2013 were developed by applying a 2 percent per year ambient growth rate to account for historical traffic growth and for unknown intensification in land uses.

Capacity calculations were conducted for the 2013 base conditions volumes. Table 4.4-3 illustrates the V/C ratios and LOS for the study intersections for both the morning and afternoon peak periods.

Four of the seven study intersections are projected to operate at LOS F during both the morning and afternoon peak period. These intersections include the Sepulveda Boulevard/I-405 ramps (north off- and southbound), Mountaingate Drive and Sepulveda Boulevard, and Rimerton Road and Sepulveda Boulevard. In addition, the intersection of Rimerton Road at I-405 southbound ramp is projected to operate at LOS F during the morning peak period. The northbound left approach of Sepulveda Boulevard at I-405 northbound on-ramp is projected to operate at LOS F during the PM peak period. The remainder of the study intersections operate at LOS B or C.

Impacts

Design Year Base Conditions With Potential Mission-Rustic-Sullivan Canyons Landfill. Two waste stream scenarios were analyzed for the design year (2013) conditions with the project:

- 2,000 TPD - This scenario involves the disposal of 2,000 TPD of waste. Approximately 286 waste disposal trucks (average 7 tons/truck) per day would arrive at the project site. Additionally, 30 persons would be employed at the site.
- 16,500 TPD - This scenario involves the disposal of 16,500 TPD of waste. Approximately 2,357 trucks (average 7 tons/truck) would arrive at the site per day. Additionally, 108 persons would be employed at the site.

Trips generated by operation of the landfill for site were assigned to the roadway network and traffic volumes were added to the base conditions for both scenarios.

The projected V/C ratios and levels of service for both scenarios are shown in Table 4.4-3. For both project scenarios, four intersections are projected to operate at LOS F during both peak periods. They are Rimerton Road at Sepulveda Boulevard; Sepulveda Boulevard at Mountaingate Drive; and Sepulveda Boulevard at the I-405 northbound off- and southbound ramps. The intersection of Rimerton Road at the I-405 southbound ramps is projected to operate at LOS F during the AM peak period, while the northbound left approach of Sepulveda Boulevard at I-405 northbound on-ramp is forecast to operate at LOS F during the PM peak period.

In each case detailed above, ambient traffic growth and anticipated land use increases cause severe congestion along Sepulveda Boulevard. This congestion is directionally peaked and indicates heavy use of this route by commuters as a bypass to the San Diego Freeway. Introduction of project traffic causes a slight deterioration in projected operations. Due to the grades in the area, truck operations would impact the traffic flow along Sepulveda Boulevard. These impacts would be most acute at the site access driveway and at the ramp entries to Sepulveda Boulevard.

The circulation element of the City of Los Angeles classifies Sepulveda Boulevard as a major arterial with a right-of-way of 100 feet and a cross section of 80 feet. Future traffic volumes suggest the need for four through lanes without the project. In order to accommodate future traffic volumes, this facility should be improved to its functional classification designation.

Mitigation Measures

Six study intersections are projected to be significantly impacted by the project scenarios. Mitigation measures for these intersections are presented below:

- **Rimerton Road at I-405 Southbound Ramps** - Provide a free eastbound right-turn lane onto the freeway. This would improve the AM V/C ratio under project scenario 1 to 0.78 (LOS C). With the 16,500-TPD waste stream scenario, the additional measure of adding dual left-turn lanes from Rimerton Road onto the freeway would improve the AM V/C ratio to 0.66 (LOS B).
- **Rimerton Road at Sepulveda Boulevard** - Provide two additional through lanes in each direction along Sepulveda Boulevard. In the westbound direction, add a third left-turn lane. These mitigation measures are

projected to reduce the morning V/C ratio to 0.79 (LOS C) and the afternoon V/C ratio to 0.76 (LOS C) for the 2,000-TPD waste stream scenario.

- **Mountaingate Drive at Sepulveda Boulevard** - Provide two additional through lanes in each direction along Sepulveda Boulevard. With the 2,000-TPD waste stream scenario, this would improve the AM V/C ratio to 0.78 (LOS C) and the afternoon V/C ratio to 0.56 (LOS A). With 16,500-TPD waste stream scenario, this mitigation measure would reduce the morning V/C ratio to 0.79 (LOS C) and the afternoon V/C ratio to 0.58 (LOS A).
- **Sepulveda Boulevard at I-405 Southbound Ramps** - Provide two additional through lanes in each direction along Sepulveda Boulevard. With the 2,000-TPD waste stream scenario, this would reduce the AM V/C ratio to 0.68 (LOS B) and the PM V/C ratio to 0.53 (LOS A) while with the 16,500-TPD waste stream scenario, this would reduce the AM V/C ratio to 0.69 (LOS B) and the PM V/C ratio to 0.55 (LOS A).
- **Sepulveda Boulevard at I-405 Northbound Off-Ramp** - Provide two additional through lanes in each direction along Sepulveda Boulevard. With the 2,000-TPD waste stream scenario, this would improve the morning V/C ratio to 0.65 (LOS B) and the afternoon V/C ratio to 0.70 (LOS C). With the 16,500-TPD waste stream scenario, this would improve the morning V/C ratio to 0.67 (LOS B) and the afternoon V/C ratio to 0.72 (LOS C).
- **Sepulveda Boulevard at I-405 Northbound On-Ramp** - Provide a northbound left-turn lane on Sepulveda Boulevard. This would remove the queue that would form for left turns onto the on-ramp and would enable the northbound through move to continue unimpeded.

Design Year Cumulative Conditions With Potential Mission-Rustic-Sullivan Canyons Landfill

Cumulative trips were added to the ambient growth and two project scenarios. The cumulative traffic was calculated from the list of approved projects (Table 4.1-6).

Cumulative Impacts. The results of this analysis are summarized in Table 4.4-3. The four study intersections under both waste stream scenarios are Rimerton Road at Sepulveda Boulevard, Sepulveda Boulevard at Mountaingate Drive, and Sepulveda Boulevard at the I-405 southbound and northbound

off-ramps. In addition, the intersection of Rimerton Road at the I-405 southbound ramps is forecast to operate at LOS F during the AM peak period and the northbound left approach of Sepulveda Boulevard at I-405 northbound on-ramp is forecast to operate at LOS F during the PM peak period.

Mitigation Measures. The addition of cumulative traffic to ambient growth and the two project scenarios causes six intersections to become significantly impacted. Mitigation measures for these intersections are presented below:

- **Rimerton Road at I-405 Southbound Ramps** - Provide a free eastbound right-turn lane onto the freeway. This would improve the AM V/C ratio under project scenario 1 to 0.79 (LOS C). For the 16,500 scenario, the additional measure of adding dual left-turn lanes from Rimerton Road onto the freeway would improve the AM V/C ratio to 0.66 (LOS B).
- **Rimerton Road at Sepulveda Boulevard** - Provide two additional through lanes in each direction along Sepulveda Boulevard. In the westbound direction, add a third left-turn lane. These mitigation measures are projected to reduce the morning V/C ratio to 0.85 (LOS D) and the afternoon V/C ratio to 0.84 (LOS D) under the 2,000-TPD scenario.
- **Sepulveda Boulevard at I-405 Southbound Ramps** - Provide two additional through lanes in each direction along Sepulveda Boulevard. For the 2,000-TPD scenario, this would reduce the AM V/C ratio to 0.80 (LOS D) and the PM V/C ratio to 0.66 (LOS B) while under the 16,500-TPD scenario, this would reduce the AM V/C ratio to 0.81 (LOS D) and the PM V/C ratio to 0.68 (LOS B).
- **Sepulveda Boulevard at I-405 Northbound Off-Ramp** - Provide two additional through lanes in each direction along Sepulveda Boulevard. With the 2,000-TPD scenario, this would improve the morning V/C ratio to 0.75 (LOS C) and the afternoon V/C ratio to 0.80 (LOS D). With the 16,500-TPD scenario, this would improve the morning V/C ratio to 0.78 (LOS C) and the afternoon V/C ratio to 0.81 (LOS D).

Unavoidable Impacts. The cumulative impacts at the intersection of Sepulveda Boulevard and Mountaingate Drive is unmitigable under both waste stream scenarios and the cumulative impacts at the intersection of Rimerton Road at Sepulveda Boulevard is unmitigable under the 16,500-TPD scenario.

4.4.6 Combined Operation Impact Assessment

Cumulative impacts for simultaneous operation of Elsmere Canyon and Towsley Canyon discussed below.

Combined Operations

Elsmere Canyon is being considered as a potential site for a new landfill by a private proponent. Elsmere Canyon is located off the Antelope Valley Freeway (SR-14) at the San Fernando Road ramps. It is situated in an unincorporated part of the County, east of the City of Santa Clarita (see Figure 4.4-4). Located approximately 5 miles to the northwest of Towsley Canyon, combined operations of the two landfills could have an impact on the surrounding street system. The concurrent operation of Towsley and Elsmere Canyons would cause an increase in 2013 traffic volumes on the Golden State Freeway (I-5) and the Antelope Valley Freeway (SR-14).

The 2,000-TPD waste stream scenario causes an increase in average daily freeway traffic of between 0.10 and 0.20 percent over expected 2013 base volumes. The 16,500-TPD scenario causes as much as 1.1 percent increase in traffic in some freeway segments near the sites, above 2013 expected volumes. An analysis of freeway operations indicates that levels of service would be slightly decreased should this occur. However, this additional project does not cause a significant impact on freeway operations.

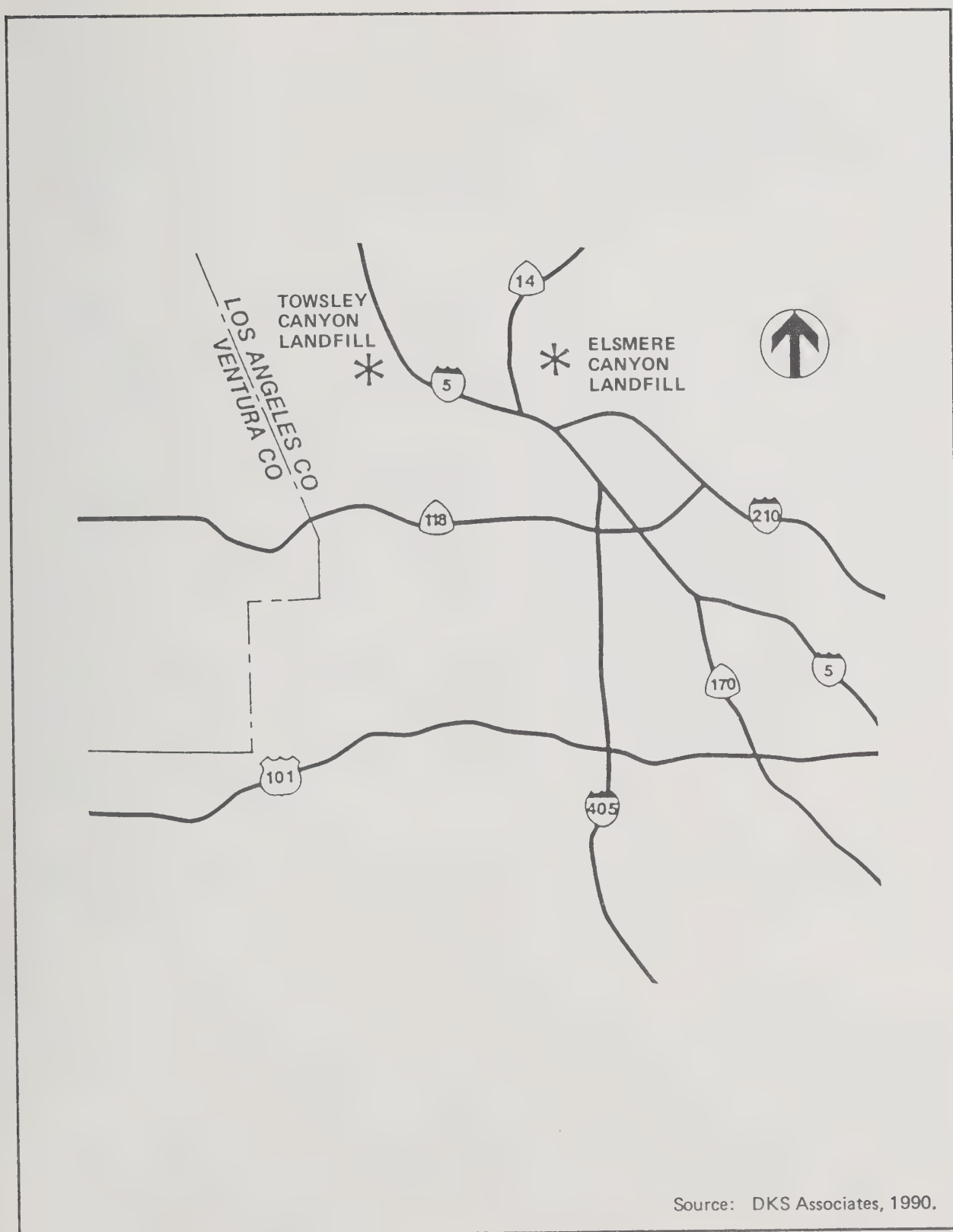


Figure 4.4-4 Towsley and Elsmere Canyons Landfill Project Sites

4.5 ODOR AND LANDFILL GAS

The production of odor and landfill gas can cause potential environmental impacts at landfills. Odor and landfill gas are addressed together because of the common relationships that exist in a landfill setting with respect to generation, detection, control, and monitoring.

4.5.1 Waste Diversion

Impacts and Mitigation Measures

Impacts and mitigation measures associated with odor are discussed below. Because specific facility sitings are not included in this Program Environmental Impact Report (EIR), the discussion is necessarily general in nature.

Collection and Intermediate Handling. Improper pretreatment of materials (e.g., rinsing containers) would increase the potential for odor problems throughout the system from storage to setout, collection, and processing. These problems can be mitigated by careful monitoring, public education, and enforcement efforts. Materials recovery processing facilities would most likely utilize carbon filter systems for odor control.

Ultimate Processing. Improper control of compost piles can result in unpleasant odors generating from unwanted anaerobic activity. These can be mitigated by utilization of appropriate aeration techniques such as proper use of bulking agents, periodic turning of piles, or forced air piping.

Unavoidable Impacts

There are no unavoidable impacts. The major odor issue is associated with composting and while odor generation can be significant in an improperly operated facility, measures are available to mitigate impacts.

4.5.2 Issues Common To All Landfills

This section addresses those issues associated with odor and landfill gas that are common to each of the potential landfill sites. These issues relate to municipal solid waste, municipal sewage sludge, and landfill gas as odor sources and the potential impacts of these sources on surrounding land uses. Potential safety hazards are associated with landfill gas migration beyond the landfill project boundaries. Other issues relate to groundwater quality, vegetation, and air quality (Section 4.6).

Section 4.6 addresses the air quality and health risk issues associated with landfill gas. The regulatory framework discussed below relative to landfill gas control is directly applicable to the air quality analysis. The landfill gas control measures discussed in this subsection would control emissions to limits imposed by the South Coast Air Quality Management District (SCAQMD), resulting in impacts which are less than significant.

Setting

Landfill gas is the product of natural anaerobic biological decomposition of organic materials and typically contains nearly equal amounts of carbon dioxide (CO_2) and methane (CH_4 , or natural gas) with traces of other decomposition by-products. The trace gases contain odor-producing components consisting primarily of short chain fatty acids and sulfur-containing compounds. Landfill gas typically has about one-half the energy value of natural gas, and it represents a valuable energy resource.

Sources of Odor. There are two potential sources of odor generally associated with landfilling operations. The first source of odor is directly from specific types of solid waste as they are brought into the landfill and prior to their being covered with daily cover. Certain types of household wastes--including cooked and uncooked foodstuffs and meats, garden waste, and wet wood shavings--may begin decomposition before being delivered to the landfill. These types of waste release low levels of distinct scents that contribute to the odor level. The extent of odor generation is influenced directly or indirectly by factors which include the types of materials comprising the waste, the age of the refuse, the acidic content of the waste (pH level), and the moisture content in the refuse.

The second source of odor is natural landfill gas which is produced by the anaerobic microbial decomposition of organic matter in solid waste. Carbon dioxide and methane are the two main constituents of landfill gas, neither of which has a perceptible odor to humans. As the landfill gas is generated within the landfill cells, and in the absence of an engineered collection system, internal pressures move the landfill gas out of the landfill along paths of least resistance, usually upward out of the landfill top surface.

Regulatory Overview. Below is a discussion regarding regulations on odor control (see Appendix E for further details.) The California Integrated Waste Management Board (CIWMB) has minimum standards for solid waste handling and disposal (Title 14, Chapter 3 of the California Code of

Regulations) which include descriptions of required performance levels for sanitary landfills. These standards are enforced by the CIWMB and the Local Enforcement Agency (LEA) through the solid waste facilities permit which sets forth conditions for operation of landfills. Title 14 specifies the use of daily cover of landfill solid waste as a means of preventing nuisances such as odors. According to Section 17682 of Title 14, "The operator shall not cause, let, permit, suffer, or allow the emission of any odorous substance which causes the ambient air at or beyond the facility's property boundary to be odorous and to remain odorous subsequent to its dilution"

As indicated in Section 4.6, Rule 1150.1 of the SCAQMD specifically addresses gaseous emissions from active landfills. The purpose of this rule is to reduce gaseous emissions to prevent public nuisance and possible detriment to public health caused by exposure to such emissions. Requirements of Rule 1150.1 include:

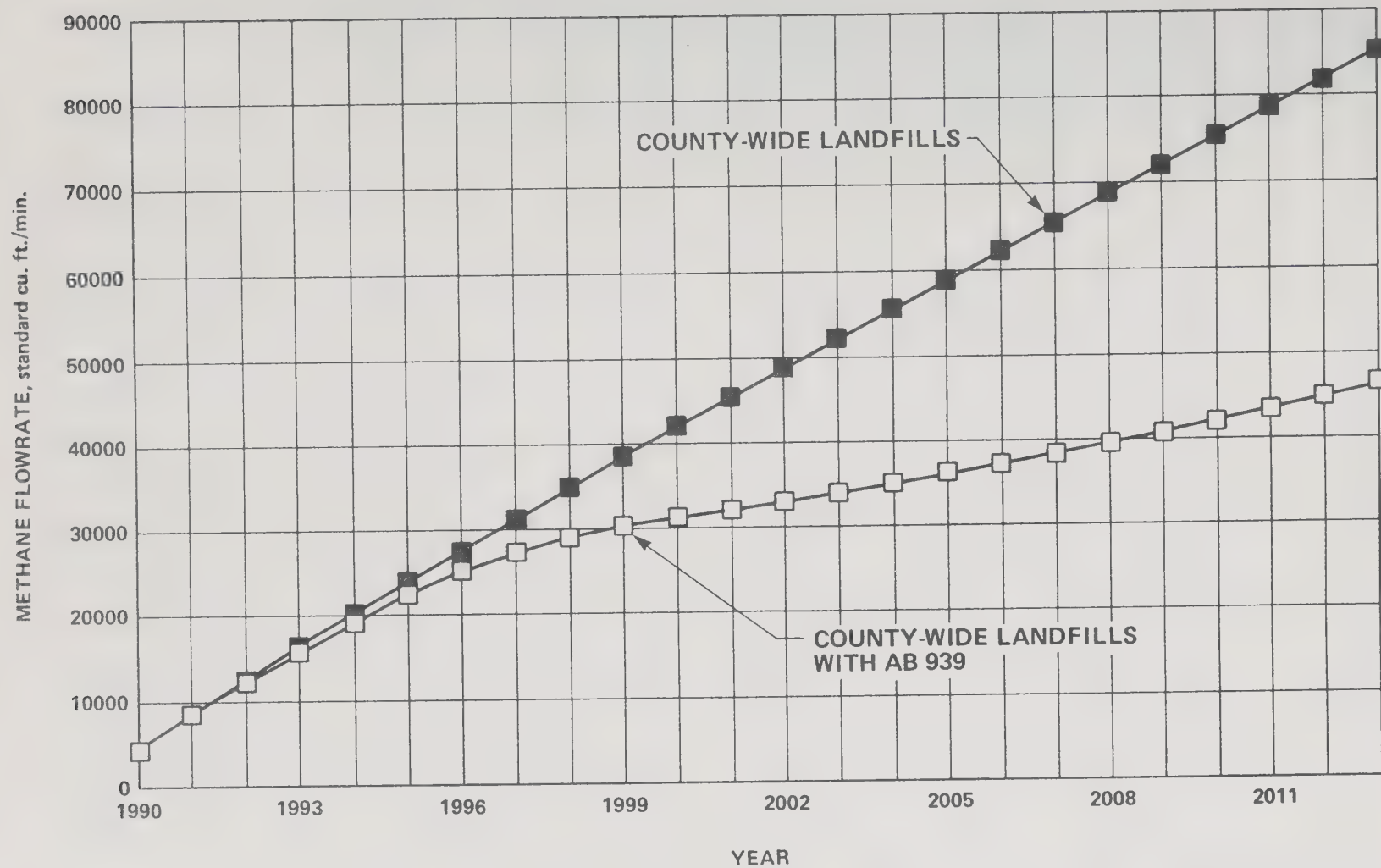
1. Installation and maintenance of a landfill gas control system approved by the SCAQMD executive officer. Such system shall be extended as necessary to prevent off-site migration.
2. Installation of sampling probes along the landfill perimeter to determine whether off-site migration exists.
3. Implementation of a sampling and analysis plan approved by the executive officer that will determine the concentrations of total organic compounds and any toxic air contaminants in the following samples:
 - Integrated air sample collected on the surface of the landfill.
 - Landfill gas collected by the landfill gas control system.
 - Landfill gas collected from the sampling probes.
 - Landfill gas collected at the landfill perimeter.
4. Collection of sufficient landfill gas with the landfill gas control system to prevent the concentration of total organic compounds as measured by an integrated air sample on the landfill surface from exceeding 50 parts per million (ppm).

5. Maintenance of the landfill gas collection system to prevent the concentration of organic compounds from exceeding 500 ppm measured as methane at any point on the landfill surface.
6. Disposal of all landfill gas collected by any of the following methods which have been demonstrated to the satisfaction of the executive officer to achieve the maximum possible efficiency:
 - Combustion
 - Treatment and subsequent sale
 - Sale and processing off site
 - Other equivalent methods

The LEA enforces regulations restricting the levels of methane (combustible gas measured as methane) in landfill soils at the perimeter and in on-site structures (constructed on or below grade within the landfill boundaries).

The maximum level of methane (or combustible gas measured as methane) measured in subsurface soils at the site perimeter cannot exceed 5 percent by volume (or the Lower Explosive Limit (LEL) of methane in air). The LEL is defined as the lowest level at which a mixture of methane and air (containing no less than 19 percent oxygen by volume) can be ignited. The maximum level of methane in an on-site structure cannot exceed 1.25 percent by volume as stated in the Code of Federal Register, 40, Part 257.3.

Landfill Gas Production. The maximum rate of landfill gas generation in sanitary landfills occurs soon after the solid waste is buried and then decreases with time. Low levels of landfill gas production continue to occur for long periods of time. The quantity and rate of landfill gas production depend on the quantity of solid waste buried, its organic content, and moisture content. Substantial reductions in organic materials in the waste stream would reduce landfill gas generation and associated emissions from the landfill and landfill flaring station. The top line of Figure 4.5-1 indicates the estimated amount of methane gas production from landfills countywide, based on existing waste stream composition and projected disposal rates. For comparison purposes, the lower line shows the expected decrease in methane gas generation based on achieving AB 939 goals of 25 and 50 percent waste diversion from landfills. The lower line also assumes that green waste is reused on site at landfills for daily cover material. It is estimated that methane gas production at landfills could be reduced by approximately 40,000 standard cubic feet a minute (scfm) if AB 939 goals could be met. The risk associated with



Source: Sanitation Districts, 1990.

Figure 4.5-1 Effect of AB 939 on County Wide Landfill Methane Gas Production

fire and landfill gas migration would also be reduced. To the extent landfill gas generation is reduced, odor generation would also be reduced.

Impacts

Potential safety and nuisance related impacts exist relative to the production and migration of landfill gas and from landfill operations. These issues are discussed below.

Landfill Gas Migration. If not controlled, landfill gas is capable of subsurface migration and escape into the atmosphere causing potential safety hazards and odor nuisances. The principal movement of landfill gas is along the path of least resistance. Typically, landfill gas migration occurs vertically through the landfill's top surface. Lateral or horizontal migration may also occur through the front slopes of the fill as well as through soils adjacent to the fill. If containment is not provided, safety problems could occur if the gas were allowed to migrate underground laterally to off-site areas. Both methane and carbon dioxide are nontoxic, but methane mixed with air, under the proper conditions, is flammable. If landfill gas were allowed to accumulate in a poorly vented structure in concentrations ranging from 5 to 15 percent (as methane) in air, the mixture would be explosive if ignited.

The presence of landfill gas in the root zone of plants may also result in a lack of oxygen, reducing the ability of trees, brush, and ground cover planted on the landfill surface to grow satisfactorily. A condition may develop, known as chlorosis, or yellowing of vegetation, if carbon dioxide concentrations exceed 15 percent in the root zone.

Landfill Operations. Localized odor from solid waste may be generated in the landfill operating area. Usually, this odor is dispersed over a short distance by dilution or mixing with air. When these odors are strong or when a slight breeze exists, this type of odor may be transmitted over longer distances. As will be discussed subsequently, odor generated in the operating area of the landfill is controlled by excluding extremely odorous loads and by application of cover.

Each of the potential landfills could receive digested, dewatered sewage sludge. Sewage sludge represents an additional potential odor source at each landfill site. However, generation of odors is minimized by stabilization of the sludge through the digestion process carried out at the wastewater

treatment plant. Once deposited at the fill area, the sludge would be mixed immediately with other solid waste and, later in the day, covered by daily cover.

Mitigation Measures

Each of the potential landfills would be engineered to meet and, in some cases, exceed regulatory agency requirements with respect to landfill gas control. Operational practices would be employed to mitigate odor problems associated with the filling operation. These measures are discussed below.

Landfill Gas Control and Monitoring. To prevent the potential migration of landfill gas to adjacent properties and its escape to the atmosphere, a gas control system would be designed and constructed at the potential landfill sites to prevent odors and meet the requirements of AQMD Rule 1150.1. The Sanitation Districts have pioneered the use of landfill gas systems for odor control and developed the design criteria now utilized throughout the County. The typical landfill gas control system would consist of a vertical gas well system and a horizontal trench system in addition to bottom and sidewall lining of the site with a low gas permeability liner. At the present time, all of the Sanitation Districts operating sites (the Puente Hills, Scholl Canyon, Calabasas, and Spadra Landfills) utilize a combination of vertical and horizontal well systems for odor and gas migration prevention. The sanitation districts have operated these existing well systems in a very successful manner. The individual system components are described in more detail below.

Liner System. As part of the groundwater protection/leachate control system, each of the potential landfills would include lining of the landfill bottoms with a composite liner system and installation of an 80-mil high-density polyethylene (HDPE) liner on the side slopes of the fill area. This system, in conjunction with the landfill gas collection system, would provide lateral and downward containment of landfill gas and would mitigate to insignificance potential hazards associated with landfill gas migration to surrounding land.

Trench System. The trench-type collection system consists of a network of pipelines laid horizontally in trenches within the buried solid waste and backfilled with 1- to 3-inch gravel. Figure 3-19 shows a typical cross section of a landfill gas collection trench.

Trench systems would be installed at approximately 80-foot vertical intervals and on 200-foot horizontal intervals. Landfill gas would be withdrawn from the surrounding waste

as soon as the trench is completed. The pipelines contain closely spaced slip joints to allow for settlement. The pipes within the gravel trenches would be connected to header collection pipelines located along the outside slopes of the landfill, which are in turn connected to blowers. The blowers would place the trenches under negative pressure in order to withdraw and deliver the landfill gas to flaring stations. Construction of the trench system would be coordinated with and part of daily landfill operations.

Vertical Well System. The purpose of the vertical well system would be to control escape of landfill gas through the front face of the fill. The vertical landfill gas recovery wells would be placed along the front faces of the potential landfills. The wells would be connected to collection pipelines, which would in turn be connected to blowers that would place the wells under vacuum to withdraw landfill gas. A typical vertical landfill gas well would normally be constructed by drilling a 30-inch-diameter hole into previously placed solid waste to a depth of between 50 and 100 feet. A concentric telescopic pipe system made of alternating lengths of 4-inch- and 6-inch-diameter perforated PVC pipe would then be placed within the hole. The space between the PVC pipe and the hole would be backfilled with 1- to 3-inch gravel. A schematic of a typical landfill gas collection well is shown on Figure 3-20. A cross-sectional view of a typical landfill gas control system, showing the placement of both vertical wells and horizontal trenches, is shown on Figure 3-16.

Landfill Gas Flare System. Initially, the landfill gas would be combusted in flares. As filling progresses and the landfill gas recovery rate increases, alternative methods for productive utilization of landfill gas will be evaluated. These alternatives include combustion in gas boiler steam turbine facilities, gas turbines or internal combustion engines to produce electricity, and selling the landfill gas to off-site customers as a replacement for natural gas or production of methanol.

Landfill Gas Condensate. Condensate is moisture that is generated during the withdrawal of landfill gas from the fill area due primarily to the difference in temperature between the fill and the collection system. The condensate would be given appropriate treatment on site, such as airstripping with the exhaust gas combusted in flares and either disposed of in the sewer or reused for dust control purposes on site.

Landfill Gas Migration Monitoring. Landfill gas monitoring probes would be installed at locations along the site boundary of the potential landfill sites. A cross section of a landfill gas monitoring probe is shown on Figure 3-21. The monitoring probes would provide a means for sampling the subsurface gases and assessing the effectiveness of the landfill gas control system in preventing subsurface landfill gas migration. Utilization of the probes would enable measurements to be taken for compliance with Rule 1150.1 and would provide an early warning of potential landfill gas migration outside of the site area.

The monitoring probes would typically be installed every 1,000 feet along the perimeter of the landfill, though closer spacings would be considered to reflect surrounding land uses. As required by Rule 1150.1, a plan for probe installation would be submitted to the SCAQMD for approval. The probes would be monitored on a routine basis in accordance with Rule 1150.1 to ensure there is no off-site migration of the landfill gas. Should landfill gas migration be detected, corrective measures would be taken and the monitoring frequency increased. Corrective measures would include additional landfill gas withdrawal rates or wells or trenches in the area where the migration was detected.

In addition to subsurface landfill gas monitoring with the use of landfill gas monitoring probes, Sanitation Districts have supplemented the landfill gas monitoring program at existing landfills with an above-surface technique to measure flux of landfill gas through the surface of the fill. The technique involves the use of an organic vapor analyzer (OVA), which is sensitive to 1 ppm of methane. The OVA is used to detect points of concentrated landfill gas release through the landfill surface. Upon detection of unacceptable concentrations of landfill gas, immediate corrective measures would be taken, such as optimization of the collection system operation or surface cover maintenance. The landfill gas monitoring program planned for the potential landfill sites would include both periodic subsurface and above surface monitoring.

At no time would any closed facility structure be placed on or adjacent to filled areas without appropriate landfill gas control measures and combustible gas monitoring devices to monitor landfill gas accumulation beneath or within the structure. The number and location of such devices would be subject to approval by the LEA.

Operational Measures. A number of operational measures would be used at each potential landfill to provide further control of odors. Excessively odorous wastes would be rejected from the site prior to unloading. Potential odors associated with the solid waste and the filling operation would be controlled by the daily application of cover material. Along with the landfill gas collection system, the cover material of the landfill itself removes odorous compounds in the landfill gas. Bacteria contained in cover material, as well as soil chemical processes, substantially reduce the trace organic components of the landfill gas, thereby reducing odors in the landfill gas not removed by the collection system. When cracks occur in the cover soil due to differential settlement, mechanical recompaction would be applied to ensure that no direct venting occurs.

Only digested, dewatered sewage sludge would be accepted at each landfill site. No raw or undigested sewage sludge would be accepted. All sludge would be mixed immediately with solid waste and with cover material at the end of the day.

Unavoidable Impacts

There are no unavoidable impacts. Implementation of the mitigation measures identified above would mitigate impacts associated with odor and landfill gas to insignificance.

4.5.3 Cumulative Impacts

Cumulative impacts relate to other potential sources of landfill gas and odor in the area of the potential landfill sites. These sources include existing and future projects, as well as nearby land uses.

Setting

There are five projects/land uses that have characteristics which could cause potential cumulative impacts. These projects include the potential Towsley Canyon Landfill, the potential Blind Canyon Landfill located about 2 1/2 miles southwest of Towsley, the Southern California Gas (SCG) Aliso Field Natural Gas Storage Facility (No. 1 on Figure 4.1-3) located approximately 1 1/2 miles south of the Towsley Canyon fill area, the Sunshine Canyon Landfill currently undergoing an expansion (No. 26 on Figure 4.1-4) and located about 4 miles southeast of the Towsley Canyon fill area, and the potential Elsmere Canyon Landfill site (Figure 3-1) located about 5 miles east of the Towsley Canyon fill area. The proposed Sunshine Canyon Landfill expansion and the potential Elsmere Canyon Landfill are being evaluated under separate EIRs.

The Aliso Field is the major gas storage facility in Southern California. Three major lines (two 30-inch and one 34-inch) bring natural gas from the western states and Canada where gas is injected into any of 100 storage wells which penetrate 9,000 feet into deep geologic formations. It is a 24-hour-per-day operation of gas injection and gas extraction for use by Southern California Gas customers.⁵⁷

Two general sources of odor exist at the Aliso Field: (1) aboveground tanks, valves, and miscellaneous equipment associated with on-site oil facilities and (2) natural gas. There have been some odor complaints with odor source 1, primarily when tank covers are removed, but these are infrequent events.⁵⁷ The gas is contained on site and any releases that might occur would rise and be quickly dispersed in the atmosphere (natural gas is lighter than air).

Impacts

Potential cumulative impacts related to odor and landfill gas migration are not significant. This is because of the following:

1. All facilities are subject to strict regulatory requirements which would individually mitigate potential odor and landfill gas impacts at each facility. SCG has been operating the Aliso Field for 17 years without incident related to gas migration and monitors surrounding oil wells on a regular basis to determine if any migration is occurring. The Towsley Canyon and Blind Canyon landfill sites would be completely lined and equipped with landfill gas control systems.
2. Substantial distances (1 1/2 to 5 miles) separate the projects from each other.

Potential air quality impacts also exist and are discussed in Section 4.6.

Mitigation Measures

Measures discussed earlier in this chapter for project impacts are adequate to mitigate potential cumulative impacts.

4.6 AIR RESOURCES

This section provides an evaluation of the air resources issues associated with waste diversion and the potential landfill sites at Blind, Towsley, and Mission-Rustic-Sullivan Canyons. The air quality technical report was prepared by Radian Corporation.

4.6.1 Regional Environment

The South Coast Air Basin (Basin) consists of Orange County and the nondesert portions of Los Angeles, San Bernardino, and Riverside Counties, a region of approximately 6,600 square miles⁹⁰. This subsection describes the meteorology and air quality of the Basin.

Meteorology

The climate of the Basin is characterized by warm summers, mild winters, infrequent rainfall, moderate daytime onshore breezes, and moderate humidity. The Basin's climate is influenced by its proximity to a semipermanent subtropical high pressure cell, which keeps the low pressure systems out of the Basin, and its location to the Pacific Ocean.

The annual average temperatures range from 61 to 65 degrees F;⁹¹ however, greater variability in annual minimum and maximum temperatures exists further inland, away from mediating ocean effects. Temperatures can affect atmospheric stability and wind patterns by creating temperature differentials in the surface boundary layer.

The rainy season in the Basin occurs between November and April. Annual precipitation amounts for the area are approximately 12 inches along the coast and 13 to 15 inches in the inland valleys.⁹¹

The Basin has very light average wind speeds. Summer wind speed averages are slightly higher than winter wind speed averages and coastal wind speed averages are higher than inland windspeed averages. The average windspeed in downtown Los Angeles is 5.7 miles per hour and does not vary much seasonally.⁹¹

Diurnal wind patterns exist throughout the Basin because of land/sea breeze effects caused by differential heat storage properties. Because winds are caused by horizontal differences in atmospheric pressure, diurnal changes in atmospheric pressure due to changes of temperature throughout the day determine the direction and intensity of the wind. The different heat storage properties of land and water also

contribute to determining the temperature at surfaces. Predominant winds usually occur onshore during the daytime and offshore during the nighttime. Occasional winter storms and "Santa Ana" flows (high pressure systems located in the inland deserts which cause hot, dry wind flows) occur in the Basin area.

Two inversion types exist throughout the Basin. The first is a surface inversion produced by offshore, descending air flows and nighttime radiational cooling. The second is a low-level inversion that caps the surface marine layer. Inversions occur when temperatures increase, rather than decrease, with height. Temperatures increasing with height throughout the lower troposphere are stabilized because cooler, "heavier" air prefers to remain near the surface; warmer, "lighter" air prefers to remain in the upper levels of the boundary layer near the mixing height. During inversion conditions, the stabilized atmospheric conditions damp out vertical mixing. As a result, potentially high concentrations of air pollutants can exist. Representative inversion data taken from the Los Angeles International Airport from 1950 to 1974 indicate that an inversion at the surface existed one out of every three days.⁹¹ The frequency of these surface-level inversions was greatest in the winter months and least in the summer months. Low-level inversions capping a surface marine layer also occurred; the frequency of these inversions was greater during the summer months when sea breezes predominate and bring marine air inland.⁹¹

Air Quality

Due to topography, geographical location, meteorology, and a large population, the Basin is very conducive to high pollutant concentrations. Despite the increasing growth in population (a 125 percent increase from 1950 to 1980), regulatory controls on stationary source emissions and, especially, mobile source emissions have caused federal- and state-regulated pollutants to gradually decrease in concentration.⁹⁰

Throughout the 1986 to 1988 period, sulfur dioxide (SO_2) and lead complied with the federal standards within the Basin. The remaining four federally-regulated pollutants exceeded their ambient air quality standards within the Basin. Ozone, carbon monoxide (CO), particulate matter less than 10 microns in size (PM_{10}), and nitrogen dioxide (NO_2) were in exceedance.

State standards have been promulgated for ozone, PM_{10} , CO , NO_2 , total suspended particulate matter (TSP), SO_2 , sulfate, lead, hydrogen sulfide, and vinyl chloride. From 1986 to 1988,

five of the ten state-regulated pollutants within the Basin complied with the state-regulated standards; sulfate was not in compliance in 1986 and 1988.^{90,92} Pollutants in compliance with state standards were SO₂, sulfate, lead, hydrogen sulfide, and vinyl chloride.

Air quality monitoring data indicate that TSP and PM₁₀ have shown the least improvement in the Basin compared with other state- or federally-regulated air pollutants.⁹⁰ A federally-regulated PM₁₀ standard was not adopted until 1987, when the TSP standard was changed to PM₁₀ (PM₁₀ being a better indicator than TSP for adverse health effects). Some PM₁₀ monitoring was conducted in 1986 and increased monitoring occurred in the following years. Maximum PM₁₀ concentrations and past TSP concentrations indicate that slight decreases in particulate matter concentrations are occurring. From data recorded in 1986, 1987, and 1988, PM₁₀ concentrations exceeded the federal annual standard by 2.2 times in 1986; 1.8 times in 1987; and 2.1 times in 1988.

4.6.2 Waste Diversion

Air quality impacts associated with recycling activities are most likely to be the result of particular industrial and manufacturing processes, heat and power generators, and material transport vehicle emissions.

Impacts and Mitigation Measures

Impacts and mitigation measures associated with air quality are discussed below. Because specific facility sitings are not included in this Program EIR, the discussion is necessarily general in nature. Both the local and regional context are addressed.

Collection and Intermediate Handling. Source reduction of waste could reduce collection traffic emissions only if the volumes were sufficient to reduce the number of collection trucks required or the number of trips to the landfill by each truck. Separate collection of residential/commercial recyclables would increase collection traffic emissions. The use of three distinct trucks (one for garbage, recyclables, and yard waste) servicing all collection routes provides an even greater potential for increased vehicle emissions.

Drop-off and buyback facilities, characterized by large numbers of private vehicles delivering relatively small amounts of recyclables, can also add to total motor vehicle emissions unless the location is one already being visited for some other purpose, such as shopping. However, many buyback facilities are used by independent scavengers, commonly driving small

pickup trucks and collecting such material as corrugated, news, or glass containers. This form of separate collection may add many vehicle miles to the computation of emissions.

Ultimate Processing. Air quality considerations associated with end users are discussed below:

GLASS - Increased use of cullet (recyclable glass) in regional glass plants in place of virgin materials will reduce air pollutant emissions (principally CO, SO₂ and particulates) by displacing raw materials that require refining. One industry source estimates a reduction of air emissions from 300 pounds to 20 pounds for every input ton of cullet used instead of raw materials.⁹³

TIN-PLATED STEEL CANS - Regional detinning facilities, absorbing an increased supply of cans, will have an increase in emissions of ammonia, a by-product of the detinning process.

PAPER - Most regional paper plants operate steam boilers. Stack emissions will include nitrogen oxides (NO) and sulfur oxides (SO). Any expanded mill capacity or new mill construction motivated by increased supply of recovered paper will result in an increase in boiler stack emissions. These emissions may be mitigated by the application of Best Available Control Technology (BACT) devices.

ALUMINUM - To the extent that increased scrap aluminum supply is used by regional smelters to convert to ingot, additional air quality impacts may be anticipated. Dross is formed in substantial quantities in the remelting process and is generally treated in rotary furnaces with fluxes of sodium and potassium chlorides to recover the metal values. Fumes and residues from these fluxes and the treatment of dross are problems of environmental concern. The molten metal is also treated for removal of undesirable trace elements by furnace fluxing, which can produce undesirable fumes and air pollution. This can be mitigated by applying alternative cleaning techniques.⁹⁴

FERROUS - There are no steel-making facilities in the region. All ferrous scrap diverted must be exported out of the County.

TRANSPORTATION - There will be an increase in truck emissions from increased traffic moving the recycled materials to domestic end users or to port for export.

The estimated emissions for increased truck traffic by pollutant are:

ROG	0.0013 lb/mile traveled
CO	0.0038 lb/mile traveled
NO _x	0.0078 lb/mile traveled
PM	0.0015 lb/mile traveled
SO _x	0.0015 lb/mile traveled

The estimates are based on emission factors for heavy duty diesel-fueled trucks from SCAQMD's Air Quality Handbook, April 1987.

Unavoidable Impacts

None. Likely impacts associated with changes in industrial and manufacturing processes, and changes in traffic patterns and volume should be mitigated by available measures to insignificant levels.

4.6.3 Issues Common to All Landfills

Air resource issues common to all landfills are discussed in this subsection. The issues include regulatory requirements and air quality impact assessment methodology.

Regulatory Overview

Regulations for air pollutant emissions exist to protect human health and welfare and the environment. Various federal, state, and local regulatory agencies such as the U.S. Environmental Protection Agency (EPA), the California Air Resources Board (ARB), and the South Coast Air Quality Management District (SCAQMD) exist to research, develop, and enforce the regulations that help govern air quality.

This air quality regulatory analysis subsection focuses on the regulations that most affect the potential landfill sites. Other federal, state, and local regulations and standards are also generally described. Table 4.6-1 lists the major regulatory agencies and their applicable responsibilities.

Federal Clean Air Act. The 1970 Federal Clean Air Act established National Ambient Air Quality Standards for the protection of human health and welfare. Presently, the following six criteria pollutants are addressed in the National Standards: ozone, CO, NO₂, O₃, PM₁₀, and lead and are tabulated in Table 4.6-2.⁹² After the enactment of the Federal Clean Air Act, it became apparent that many air districts were not complying with the National Standards. Amendments to the Act required states to submit State Implementation Plans (SIPs) to the EPA that describe how and when compliance with the National Standards would be achieved.

Table 4.6-1 Major Regulatory Agencies and Their Applicable Responsibilities

Agency	Applicable responsibility
Environmental Protection Agency	<ul style="list-style-type: none"> . Establishment of national ambient air quality standards . Development and approval of state implementation plans . Prevention of significant deterioration
Air Resources Board	<ul style="list-style-type: none"> . Establishment of state ambient air quality standards . Development and approval of local district air quality management plans
South Coast Air Quality Management District	<ul style="list-style-type: none"> . Enforcement of landfill gas control system requirements . Issuance of permits to construct and operate . Review of new or modified stationary sources . Health risk assessment of new or modified stationary sources

Source: Radian Corporation, 1990.

Table 4.6-2 Ambient Air Quality Standards

Pollutant	Averaging time	California state standard		National standard ^a	
		ppm	ug/m ³	ppm	ug/m ³
Ozone	1 hour	0.09	180	0.12	235
Carbon monoxide	1 hour	20	23,000	35	40,000
	8-hour	9.0	10,000	9	10,000
Nitrogen dioxide	1 hour	0.25	470	-	-
	Annual	-	-	0.05	100
Sulfur dioxide	1 hour	0.25	655	-	-
	3-hour	-	-	0.5 ^b	1300 ^b
	24-hour	0.05	131	0.14 ^c	365 ^c
	Annual	-	-	0.03 ^c	80 ^c
PM10	24-hour	-	50	-	150
	Annual (AGM) ^e	-	30	-	-
	Annual (AAM) ^f	-	-	-	50
TSP ^d	24-hour	-	-	150 ^b	260 ^c
	Annual	-	-	60 ^b	75 ^c
Sulfates	24-hour	-	25	-	-
Lead	30-day	-	1.5	-	-
	Quarter	-	-	-	1.5
Hydrogen sulfide	1 hour	0.03	42	-	-
Vinyl chloride	24-hour	0.010	26	-	-
Visibility reducing particulates	1 observation	In sufficient amount to reduce the prevailing visibility to less than 10 miles when the relative humidity is less than 70 percent.			

^aAll national standards are primary standards (for the protection of public health) and secondary standards (for the protection of public welfares) unless otherwise indicated.

^bSecondary standard only.

^cPrimary standard only.

^dTSP national standards were deleted in July 1987 when the PM10 national standards were promulgated.

^eAGM = annual geometric mean.

^fAAM = annual arithmetic mean.

Source: California Air Resources Board Air Quality Data, 1988.

Noncriteria pollutants, also regulated under the Act, include asbestos, beryllium, mercury, vinyl chloride, fluorides, sulfuric acid mist, hydrogen sulfide, total reduced sulfur, and reduced sulfur compounds.

Federal Prevention of Significant Deterioration.

Federally-regulated prevention of significant deterioration (PSD) rules are designed to ensure that air quality, in areas meeting the national ambient air quality standards ("clean areas"), does not significantly deteriorate while maintaining a margin for future industrial growth. PSD applies to new major sources or major modifications in areas designated as "attainment" or "unclassifiable" under Section 107 of the Federal Clean Air Act for any National Standards criteria pollutant (CO, NO_x, SO₂, PM₁₀, ozone, and lead).

The South Coast Air Basin, where the potential new landfill sites are located, is in attainment of the federal standards for SO₂ and lead. A portion of one potential site, Blind Canyon, also lies within the Ventura County lines and may be subject to the PSD rules as they apply to the South Zone of Ventura County. This zone is in attainment of CO, NO_x, SO₂, PM₁₀, and lead. Thus, PSD regulations may apply to sulfur dioxide and lead for all of the potential landfill sites, and apply to CO, NO_x, SO₂, PM₁₀, and lead for a portion of the potential Blind Canyon Landfill site.

California Clean Air Act. In parallel to the Federal Clean Air Act, California recently enacted the California Clean Air Act to adopt and enforce regulations to achieve and maintain California ambient air quality standards. State standards (listed in Table 4.6-2) exist for ozone, CO, NO₂, SO₂, PM₁₀, lead, hydrogen sulfide, sulfates, and vinyl chloride. The California Clean Air Act makes the ARB responsible for establishing criteria for designating air basins as "attainment," "nonattainment," or "unclassifiable" in accordance with state standards.

The California Clean Air Act requires air districts to submit plans for attaining and maintaining the California Clean Air Act to the ARB. Plans must be submitted every three years until the air district is considered to be in attainment of the state standards.

Air Toxics "Hot Spots" Informational and Assessment Act. The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) requires specified facilities to submit comprehensive air toxics emission inventory plans to local air pollution control districts by specified dates. The emission inventory criteria and guidelines regulation which has been adopted by the ARB pursuant to the Air Toxics "Hot Spots" Act

specifies how facilities are to prepare these air toxics emission inventory plans. Facility operators must inventory certain toxic substances that their facilities release into the air. Each facility must prepare a plan specifying how it will develop its emission inventory. The plans must be submitted to the air pollution control districts for approval. Upon approval, each facility must implement its plan and submit an emission inventory report to the air district. The air districts review the reports and determine which facilities must prepare risk assessments.

A list of approximately 400 toxic substances identified by reference in the Air Toxics Act was approved by the ARB in July 1988 and amended in September 1989. It is anticipated that the list will be updated annually according to criteria specified in the Air Toxics Act. For purposes of inventory emissions, the criteria and guidelines regulation separates the listed substances into two groups: (1) substances for which facilities must quantify emissions, and (2) substances for which facilities are to indicate any production, use, or other presence of the substance (such as a by-product).

South Coast Air Quality Management District. Regulatory requirements specific to the SCAQMD are discussed below.

Landfill Gas Control. SCAQMD Regulation XI, Rule 1150.1, requires that active landfill sites have a landfill gas control system installed and operated efficiently under the approval of the SCAQMD to limit emissions of landfill gas through the surface. All potential landfills would include landfill gas control systems to achieve maximum possible efficiency and would be under the jurisdiction of the SCAQMD. A complete discussion of the proposed gas control system is found in Chapter 3.

New Source Review. The new source review (NSR) rule (otherwise known as SCAQMD Regulation XIII) is intended to ensure that the operation of a new or modified stationary source does not interfere with progress in attainment of the National Ambient Air Quality Standards, without unnecessarily restricting future economic growth within the Basin. The NSR regulation applies to landfill gas combustion systems that emit any nonattainment air contaminants (a criteria pollutant which exceeds the National Standards) greater than the amounts listed in Table 4.6-3.

If a new or modified source does exceed one or more thresholds for nonattainment pollutants, a permit to construct may be approved if the following conditions are met:

Table 4.6-3 SCAQMD New Source Review (Regulation XIII)
Maximum Net Cumulative Emission Rates

Affected air contaminant	Net cumulative emission	
	kg/day	lbs/day
Carbon monoxide	249	550
Sulfur dioxide	68	150
Oxides of nitrogen	45	100
Particulate matter	68	150
Reactive organic gases	34	75
Lead compounds	1.4	3

Source: South Coast Air Quality Management District Rules and Regulations.

- Construction must utilize Best Available Control Technology (BACT) for each affected air contaminant; BACT means the most stringent emission limitation or control technique which:
 1. Has been achieved in practice for such permit unit category or class or source; or
 2. Is contained in any SIP approved by the EPA for such permit unit category or class of source; or
 3. Is any other emission limitation or control technique, including process and equipment changes of basic and control equipment, found by the Executive Officer to be technologically feasible for such class or category of sources or for a specific source, and cost-effective as compared to measures as listed in the AQMP or rules adopted by the Board.
- Modeling or other approved analyses must show that the new or modified source will not cause a violation, or make an existing violation measurably worse, of any National Ambient Air Quality Standards at any receptor location in the Basin. However, modeling is not required for reactive organics if all offset sources are within a distance of eight kilometers from the affected permit units.

Proposed Rule 1401. The SCAQMD's Proposed Rule 1401 establishes limits for maximum individual cancer risk and excess cancer incidence to be allowed from new, modified, or relocated stationary sources. Maximum individual cancer risks are determined from modeling an owner/operator's cumulative source impacts of benzene, asbestos, cadmium, hexavalent chromium, dioxins, carbon tetrachloride, ethylene dichloride, ethylene dibromide, and/or ethylene oxide. In a population exposed to a cancer risk of greater than one in one million (1×10^{-6}), maximum individual cancer risks less than 10 in one million (1×10^{-5}) are acceptable by the SCAQMD if Best Available Control Technology for toxic emissions (T-BACT) is applied; if T-BACT is not applied, the maximum individual cancer risk allowed is one in one million (1×10^{-6}).⁹⁶ T-BACT means the most stringent emissions limitation or control technique which:

- A. Has been achieved in practice for such permit unit category or class of source; or

- B. Is any other emissions limitation or control technique, including process and equipment changes of basic and control equipment, found by the Executive Officer to be technologically feasible for such class or category of sources, or for a specific source. Proposed Rule 1401 is not currently (as of April 1990) legally enforced; however, the proposed rule is being presented because the SCAQMD uses it as a working guideline.

Prohibitions. The SCAQMD has many prohibitory regulations to minimize the local impact of any emission source by minimizing the impacts to health and property. The rules pertinent to the potential landfills are:

- Rule 401 -- Visible Emissions;
- Rule 402 -- Nuisance;
- Rule 403 -- Fugitive Dust;
- Rule 404 -- Particulate Matter - Concentration;
- Rule 405 -- Solid Particulate Matter - Weight;
- Rule 407 -- Liquid and Gaseous Air Contaminants;
- Rule 408 -- Circumvention;
- Rule 409 -- Combustion Contaminants;
- Rule 431.1 -- Sulfur Content of Gaseous Fuels;
- Rule 473 -- Disposal of Solid and Liquid Wastes;
- Rule 474 -- Fuel Burning Equipment Oxides of Nitrogen.

Regulatory impact levels for each of the identified rules are described in detail in the SCAQMD's Rules and Regulations. Select rules that have the greatest effect on the potential landfills are summarized below:

- Rule 401 -- Visual Emissions -- Degree of opacity may not equal or exceed Ringelman No. 1 for more than 3 minutes in any one hour.
- Rule 402 -- Nuisance -- Air contaminants must not endanger the comfort, repose, health, or safety of any considerable number of persons or the public and must not cause injury or damage to business or property.

- Rule 403 -- Fugitive Dust -- Fugitive dusts must be minimized; visible emissions of fugitive dust are not allowed beyond the property line. Total suspended particulate matter must not exceed 100 micrograms per cubic meter (mg/m^3) when determined as the difference between upwind and downwind samples at the property line for a minimum of five hours.
- Rule 407 -- Liquid and Gaseous Air Contaminants -- Carbon monoxide must not exceed 2,000 parts per million by volume (ppmv), measured on a dry basis, averaged over a minimum of 15 consecutive minutes; sulfur dioxide must not exceed 500 ppmv, measured on a dry basis, averaged over a minimum of 15 consecutive minutes.

South Coast Air Basin Air Quality Management Plan. Local air pollution control districts such as the SCAQMD must provide input into the State Implementation Plan (SIP) by submitting an Air Quality Management Plan (AQMP). Several local and state agencies are responsible for completing the South Coast Air Basin AQMP. The SCAQMD is responsible for completing the overall AQMP; the Southern California Association of Governments (SCAG) is responsible for developing regional plans for transportation management, growth, and land use; and the ARB is responsible for developing mobile source control measures (e.g., vehicle emission standards and fuel specifications).⁹⁷

The purpose of the SCAQMD 1988 Revision of the AQMP is to initiate a comprehensive control program that will lead the Basin into compliance with all federal and state air quality standards. When the 1988 Revision of the AQMP is adopted locally and approved by the ARB, it will then be included in the SIP.

Presently, the SCAQMD's air quality plans call for attainment of all the federal and state health standards (ambient air quality standards) by the following dates:

- December 31, 1996 for NO_2 ;
- December 31, 1997 for CO; and
- December 31, 2007 for ozone and PM_{10} .

Interim goals have been set for ozone and PM_{10} to be met by the year 2000. The interim goal for ozone is to reduce the maximum concentrations to no higher than the Stage I emergency episode level (0.20 ppm) and to reduce the average per capita exposure to ozone levels above the federal standard by 70 percent compared to 1985. For PM_{10} , the interim goal is to attain the federal standard.⁹⁷

Ventura County Air Quality Management Plan. The Ventura County Air Pollution Control District has adopted the Ventura County AQMP. The AQMP was developed by the staff of Ventura County's APCD along with public input.⁹⁸

Currently, Ventura County is in nonattainment of the National Standards for ozone. The 1987 AQMP focuses on the ozone nonattainment problem through area and stationary source control tactics, transportation control measures, and annual emission reduction targets through the year 2010. Precursors to ozone are reactive organic compounds (ROCs) and NO_x . Therefore, the key to reducing ambient air levels of ozone is to reduce ROC and NO_x emissions. The Ventura County AQMP does not provide the information needed to predict a target attainment date for ozone.⁹⁰

Air Quality Impact Assessment Methodology

The methodologies used in assessing the potential air quality and health risk impacts are discussed in this section. Topics included are waste stream scenarios, air dispersion models, the criteria used for the assessment of air contaminant impacts, and health risk assessment.

Waste Stream Scenarios. Criteria pollutant and toxic pollutant impacts were estimated based on two waste stream scenarios (see Chapter 3) at the potential landfills. The waste stream scenario for Blind, Towsley, and Rustic-Sullivan Canyons landfill sites was 16,500 tons per day (TPD). A waste stream scenario of 6,000 TPD was assessed for Mission Canyon, as this was the waste stream for which the design was evaluated in the 1980 Final EIR for Mission Canyon.⁴

Air Dispersion Models. Approved EPA and SCAQMD regulatory air dispersion models were used to estimate the pollutant impacts from the landfill gas flares and the pollutant impacts from the proposed landfills. The specific methodology was approved by the SCAQMD prior to conducting the analysis. The Industrial Source Complex Short Term (ISCST) and the Rough Terrain Diffusion Model (RTDM) were used to estimate the criteria pollutants and the toxic pollutant impacts due to the flaring of landfill gas. ISCST was used to model impacts occurring at downwind receptors lower than the height of the flare stack heights while RTDM was used to evaluate impacts occurring at or above the flare stack heights. Hourly meteorological data for the "worst dispersion year"--1981--have been used with both ISCST and RTDM.⁹⁹ Locations of the meteorological data used will be described in the site-specific discussions below.

CALINE4 is a Gaussian plume dispersion model developed by the California Department of Transportation (DOT) to predict air pollutant concentrations near roadways.¹⁰³ It was used to estimate the criteria pollutant impacts due to vehicle traffic at the most impacted intersections associated with each of the potential landfill sites. Morning traffic peaks were used to coincide with projected maximum landfill related traffic.

Criteria for Assessing Air Contaminant Impacts. Project emission impacts were compared to regulatory air quality standards and applicable measurable impact levels (SCAQMD guidelines presently proposed in the New Source Review Rule 1303). To determine if air quality compliance is met for each regulated pollutant and averaging time, the following steps are employed:

- Determine if the existing background concentration already exceeds the "most stringent air quality standard";
- If the background concentration is in exceedance of the air quality standard, the criteria pollutant will meet air quality compliance if the "project emission impact" is less than the "measurable impact level"; and
- If the background concentration is less than the air quality standard, the criteria pollutant will meet air quality compliance if the "total project emission impact is less than the "most stringent air quality standard."

Summaries of results are included in the impacts sections of the individual landfill site discussions.

Health Risk Assessment. To evaluate the public health impacts associated with potentially toxic emissions from the landfill gas combustion systems, a health risk assessment (HRA) was conducted. HRA is a quantitative evaluation of the potential for adverse health effects from exposure to toxic substances in the environment. The assumptions made regarding toxicology, emission estimates, environmental fate, and human exposure create some uncertainty in the risk results. Because of this uncertainty, conservative assumptions are made that may result in an overestimate of the potential health risk.

The following steps were taken in conducting the HRA for the potential landfill project:

- Emission estimation and hazard identification;
- environmental transport and fate evaluation;
- exposure assessment;
- dose-response assessment; and
- risk characterization.

Emissions of toxic air contaminants were estimated based on operating characteristics of the proposed landfill gas combustion systems and analysis of the estimated composition of the landfill gas and the landfill capacity scenarios.

The HRA focused on the inhalation pathway. Since the carcinogenic air contaminants emitted from the potential landfill projects would be in the gaseous state, inhalation exposure was evaluated over a 24-hour day, 365-day-per-year, 70-year period for a hypothetical maximally exposed individual (MEI). Both carcinogenic and noncarcinogenic risks were assessed. Carcinogenic risks were assessed using cancer potency factors developed by the EPA and the California Department of Health Services (DHS). Noncarcinogenic effects were evaluated by comparing the estimated annual inhalation dose for each chemical with reference dose values, which represent an exposure level below which adverse health effects will not occur, even for sensitive individuals. The atmospheric dispersion modeling methodology was approved by the SCAQMD staff prior to conducting the analysis.

Under SCAQMD proposed Rule 1401, currently being used as administrative guidelines for permitting purposes, proposed sources must be evaluated for their potential to emit carcinogenic compounds. Using T-BACT, no new source can cause an off-site cancer risk of greater than 10 in a million (1×10^{-5}). If T-BACT is not applied, no new source can cause an off-site cancer risk of greater than one in a million (1×10^{-6}).

4.6.4 Blind Canyon

The environmental setting for Blind Canyon, including meteorology and background air quality, project impacts associated with exposure to criteria pollutants and toxic air contaminants, and mitigation measures are described below.

Setting

The local meteorology and background air quality are described in the following subsections.

Meteorology. Monthly mean minimum temperatures range from 39.1 degrees Fahrenheit (F) in December/January to 57.5 degrees F in August, while monthly mean maximum temperatures range from 67 degrees F in January to 94.9 degrees F in July.¹⁰⁰ These temperatures were measured at Pierce College in Canoga Park (approximately 7.5 miles southeast of Blind Canyon).

The annual average precipitation, measured at Aliso Canyon Oat Mountain (approximately 4.5 miles east-northeast of Blind Canyon), is 22.66 inches, 93 percent of which falls between November and April. The average monthly precipitation ranges from 0.01 inches in July to 5.6 inches in January.¹⁰⁰

A wind rose of data measured at Canoga Park is shown in Figure 4.6-1.¹⁰⁰ Canoga Park is considered a representative area around Blind Canyon. Generally, winds flow from the surrounding mountains and then eastward through the passes into the coastal plain.¹⁰²

Air Quality. The SCAQMD-operated air monitoring stations at Newhall and Reseda provided the most representative data on the conditions at Blind Canyon. Maximum concentrations measured at these sites in 1986, 1987, and 1988 are presented in Table 4.6-4.⁹² The background air quality data show that ozone, carbon monoxide, and PM₁₀ concentrations exceed the applicable limiting air quality standards.

Impacts

As previously indicated, four general source types are expected to result in emissions to the atmosphere from the potential Blind Canyon Landfill site: landfill gas combustion in flares; fugitive emissions (from both the construction and operation phases); on-site vehicle traffic; and off-site, or mobile, vehicle sources.

Landfill Gas Combustion. Landfill gas would be collected by a gas collection system and then flared. The design of the flare system is based on the projected quantity of landfill gas generation, which is a function of the fill rate of the landfill. The gas flow at a 16,500 TPD fill rate is approximately 37,200 standard cubic feet per minute (scfm) over a 20 year period. In general, flares of two different designs would be used over the life of the landfill. During the initial phase of the landfill operation, standard flares would be used. The standard flares would then be relegated to a backup role and replaced with new, large capacity flares when sufficient gas is generated. The approximate flare locations are shown on Figure 4.6-2.

Emissions. Combustion of landfill gas in flares would result in the emission of both criteria pollutants and TACs. The criteria pollutants emitted would include SO₂, CO, NO_x, PM₁₀, and nonmethane hydrocarbons. Criteria pollutant emission rates were estimated by using source test data from a similar landfill gas flaring system and the characteristics of standard and large capacity flares

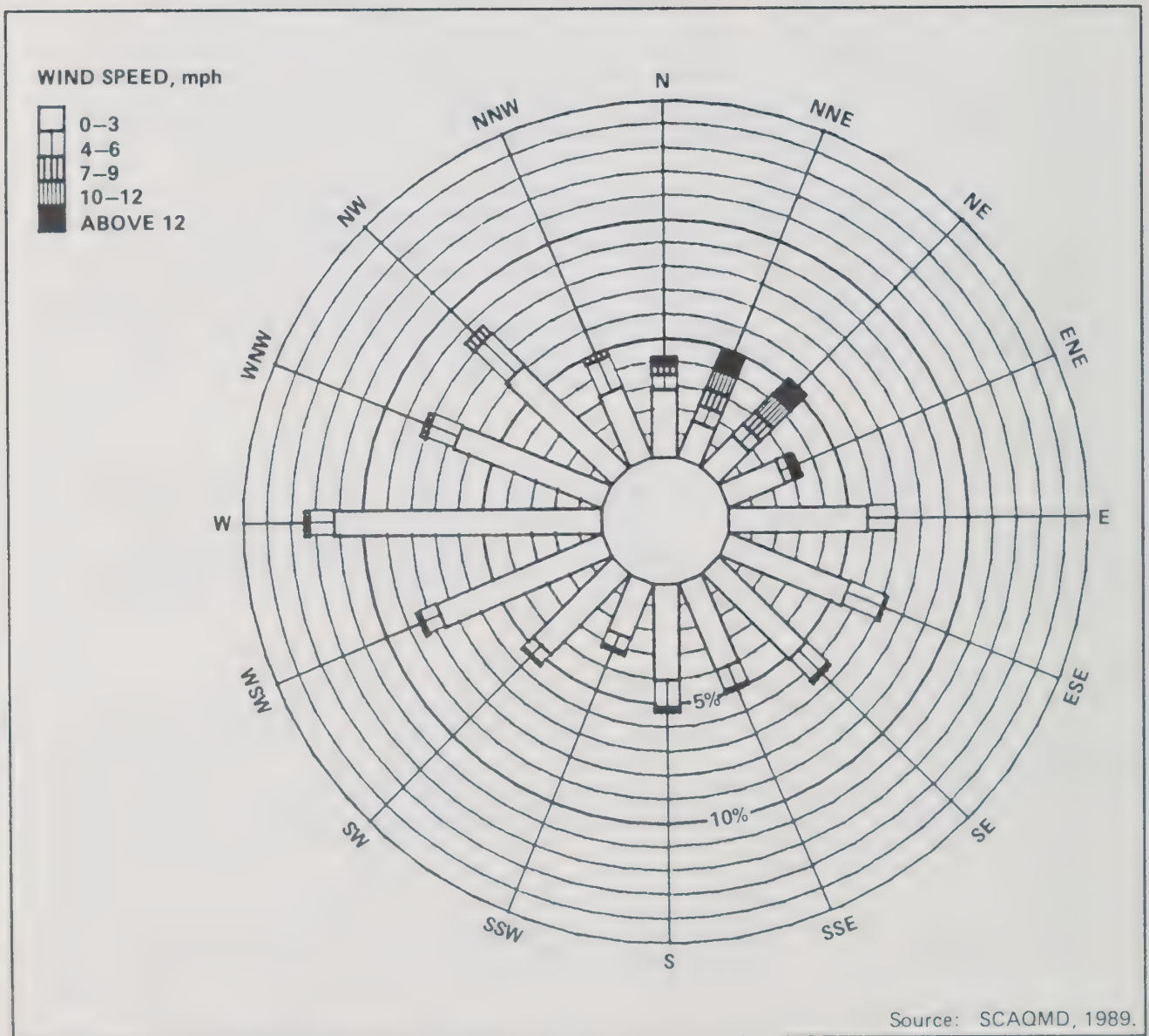


Figure 4.6-1 Wind Rose at Canoga Park (1956-1976)

Table 4.6-4 Background Ambient Air Quality Data for Blind Canyon

Pollutant	Averaging period	Background concentrations by year ^{a,b}			Ambient air quality standard
		1986	1987	1988	
Carbon monoxide	1 hour	21,748	17,170	18,314	23,000 ^c
	8-hour	17,971	13,850	15,029	10,000 ^c
Nitrogen dioxide	1 hour	415	283	377	470 ^c
	Annual	53	60	71	100 ^d
Ozone	1 hour	470	412	589	200 ^c
Sulfur dioxide	1 hour	53	52	52	655 ^c
	3-hour	NM	NM	NM	1,300 ^d
	24-hour	37	37	34	131 ^c
	Annual	7.9	5.2	4.5	80 ^d
Lead	30-day	0.21 ^e	0.33 ^f	0.21 ^f	1.5 ^c
	Quarter	0.16 ^e	0.22 ^f	0.15 ^f	1.5 ^d
Sulfates	24-hour	9	15	17	25 ^c
Suspended particulate matter (PM10)	24-hour	136 ^f	113 ^f	149 ^f	50 ^c
	Annual	51 ^{f,g}	45 ^{f,g}	52 ^{f,g}	30 ^c
Hydrogen sulfide	1 hour	NM	NM	NM	42 ^c
Vinyl chloride	24-hour	NM	NM	NM	26 ^c

^aMeasured at the Newhall monitoring station. All units are in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). NM = not measured.

^bCalifornia Air Resources Board, "California Air Quality Data. Summary of 1986 Air Quality Data," California Air Resources Board, Sacramento, California, 1986.
California Air Resources Board, "California Air Quality Data. Summary of 1987 Air Quality Data," California Air Resources Board, Sacramento, California, 1987.
South Coast Air Quality Management District, "1988 Air Quality," South Coast Air Quality Management District, El Monte, California, 1988.

^cCalifornia ambient air quality standard.

^dNational ambient air quality standard.

^eData from closest representative monitoring station (Reseda).

^fData from closest representative monitoring station (Long Beach).

^gBased on geometric mean of all reported values during the year.

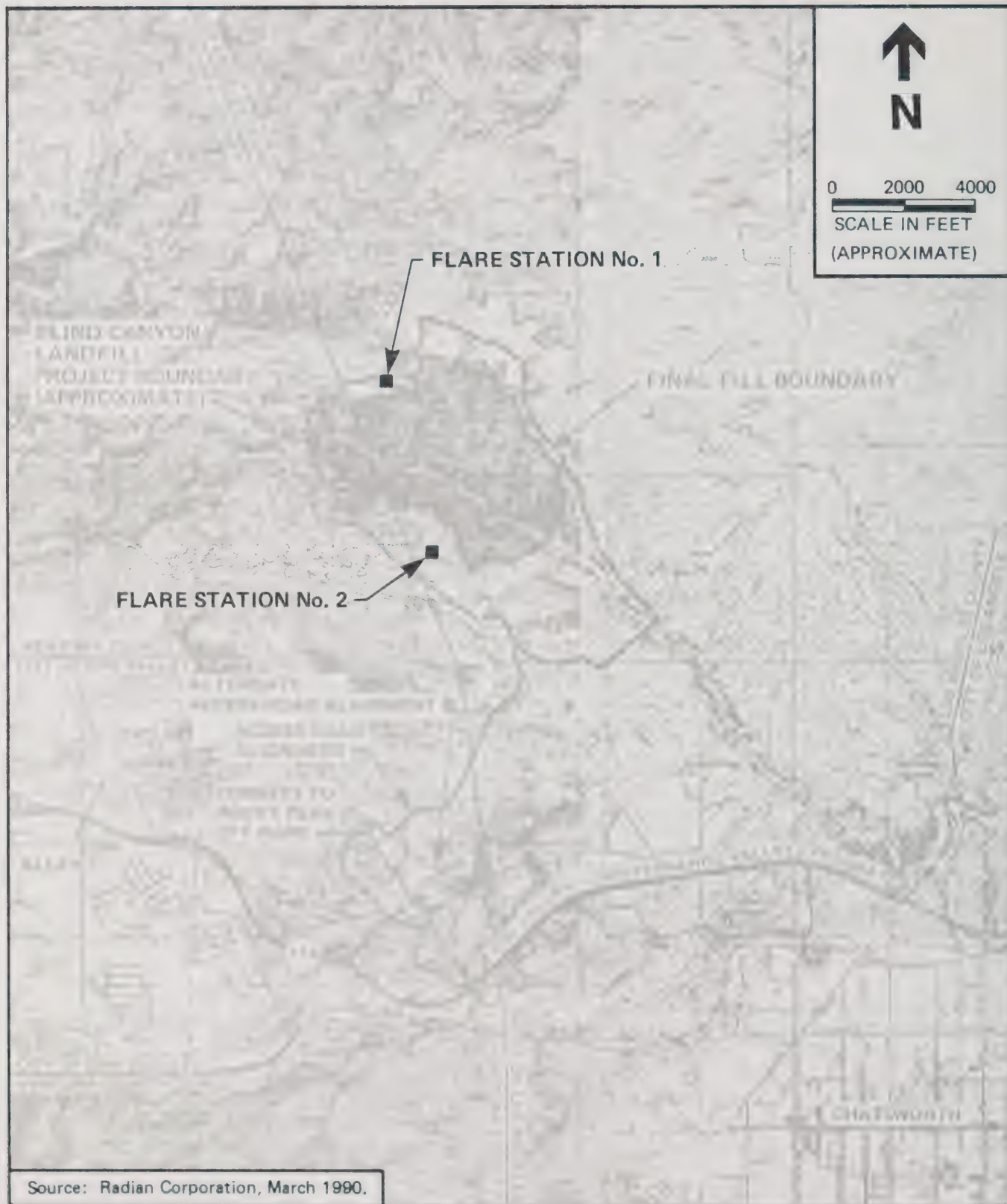


Figure 4.6-2 Flare Station Locations at the Potential Blind Canyon Landfill Site

to be used in this potential landfill project.¹⁰⁴ The general design option analyzed involved a six-flare system assuming a fill rate of 16,500 TPD.

Toxic air contaminants evaluated as part of this Program EIR include requirements specified by the SCAQMD under Rule 1150.1 for active landfills. Emission rates were calculated and estimated using the methodology described above. Where the listed TACs were identified in the source test results as being below the limit of detection, a value of one-half the limit of detection for the analytical method used was assumed for the purpose of estimating an emission rate for that particular toxic air contaminant.

Table 4.6-5 summarizes the anticipated pollutant emission rates associated with combustion of landfill gas in the flares proposed for use at the potential Blind Canyon site.

Air Quality Model Input. Hourly meteorological data used to represent the Blind Canyon meteorology were obtained from several locations. Wind speeds and wind directions were obtained from Canoga Park; surface temperatures and cloud cover were obtained from Burbank; and upper air data (mixing heights) were obtained from Ontario.

Estimated Project Impacts. The project impacts from the flaring of landfill gas for a 16,500 TPD case was determined and tabulated in Table 4.6-6. The estimated 16,500 TPD project impacts showed compliance with all applicable ambient air quality standards and SCAQMD measurable impact levels, and thus no significant impacts are expected. No mitigation measures are, therefore, required.

Fugitive Sources. Fugitive emissions would consist of dust and would result from four principal mechanisms during construction and operation of the potential Blind Canyon Landfill:

- Wind erosion of exposed soil and storage piles;
- Batch dropping of refuse;
- Grading operations; and
- Travel on paved and unpaved roads.

Table 4.6-5 Anticipated Emissions from Blind Canyon
Landfill Gas Combustion Source

Pollutant	Emission rate at 16,500 TPD (lbs/day)
Criteria Pollutants	
Sulfur dioxide	4328
Carbon monoxide	6155
Nitrogen oxides	1039
Particulate matter (PM10)	605
Reactive organic gases	82
Toxic Air Contaminants (TACs)	
Acetonitrile	1.28E-01
Benzene	1.78E-01
Benzyl chloride ^b	2.62E-01
Carbon tetrachloride ^b	3.18E-02
Chlorobenzene ^b	1.16E-01
Chloroform ^b	2.47E-02
Dichlorobenzene ^b	1.52E-01
1,1-Dichloroethane ^b	4.10E-02
1,2-Dichloroethane ^b	2.05E-02
1,1-Dichloroethene	1.21E-01
Hydrogen sulfide	9.17E+02
Methylene chloride	1.23E-01
Tetrachloroethylene	2.06E-01
Toluene	6.30E-01
1,1,1-Trichloroethane ^b	2.77E-02
Trichloroethylene	1.36E-01
Vinyl chloride ^b	1.29E-02
Xylenes	1.41E+00

^aAssumes a six-flare large capacity system.

^bSource test results used for estimates indicate levels below the level of detection (LOD); therefore, emission rates are based on one-half the LOD.

Source: Based on large capacity flare emission data provided by the Sanitation Districts.

Note: TPD = tons per day; lbs/day = pounds per day; and TAC's are expressed in powers of 10, i.e. $8.85 \text{ E-}05 = 8.85 \times 10^{-5}$ and $9.17 \text{ E+}02 = 9.17 \times 10^2$.

Table 4.6-6 Estimated Project Impacts for Blind Canyon Landfill
With the 16,500 TPD Fill Scenario Using
Six Large Capacity Flares

Pollutant	Averaging time	(1) ^a Project impact (ug/m3)	(2) ^a Background concentra- tion (ug/m3)	(3) ^a Total impact ^b (ug/m3)	(4) ^a Measurable impact level ^c (ug/m3)	(5) ^a Most stringent air quality standard (ug/m3)
Carbon monoxide	8-hour	<u>40.59^d</u>	17,970.85	18,011.44	<u>516^d</u>	10000 (state & national)
	1-hour	73.57	21,748.16	<u>21,821.73^d</u>	1,146	<u>23000^d</u> (state)
Nitrogen dioxide	annual	0.87	71.27	<u>72.14^d</u>	5	<u>100^d</u> (national)
	1-hour	12.42	414.82	<u>427.24^d</u>	20	<u>470^d</u> (state)
Sulfur dioxide	annual	3.64	7.85	<u>11.49^d</u>	4	<u>80^d</u> (national)
	24-hour	14.89	36.63	<u>51.52^d</u>	18	<u>131^d</u> (state)
	3-hour	47.07	NM ^h		-	1300 (national, secondary)
	1-hour	51.73	52.33	<u>104.06^d</u>	26	<u>655^d</u> (state)
Particulate matter (PM10)	annual (AGM) ^e	<u>0.51^d</u>	50.5	51.01	<u>1^d</u>	30 (state)
	24-hour	<u>2.08^d</u>	149	151.08	<u>2.5^d</u>	50 (state)
	annual (AAM) ^f	<u>0.51</u>	55.7	56.21	-	50 (national)
Sulfates	24-hour	2.98 ^g	17.4	<u>20.38^d</u>	-	<u>25^d</u> (state)

^aFor pollutants that have background concentrations (2) in excess of the air quality standard (5), the project impact (1) must not exceed the measurable impact level (4). For pollutants that have background concentrations (2) lower than the air quality standard (5), the total impact of the project (3) must be less than the air quality standard (5).

^bTotal impact = project impact + background concentration.

^cMeasurable impact levels are guideline levels developed by the SCAQMD for use in determining project significance when background air quality is already in exceedance of the most stringent air quality standard.

^dUnderline values were used to determine air quality compliance as described footnote a.

^eAGM = Annual geometric mean.

^fAAM = Annual arithmetic mean.

^gProject impact due to sulfate = 20 percent of project impact due to SO₂.

^hNot measured.

Note: See Figure 4.5-2 for location of flare stations.

Source: Radian Corporation, 1990.

Emissions. Emissions due to wind erosion are a function of the silt content, the frequency of moderate to high winds, and the soil erodibility. Emissions from batch drop operations are a function of the silt content, moisture content, and volume of material dropped as well as the mean wind speed and drop height. Only emissions from dropping refuse have been calculated since emissions from handling soil are incorporated in the emission calculations for the grading operation. Grading emissions are primarily a function of the area being graded. Emissions from unpaved roads are a function of soil and vehicle parameters.

Estimated Project Impacts. Table 4.6-7 summarizes the fugitive dust emissions from the fill rate being evaluated. All reasonable fugitive dust features previously discussed in Chapter 3 would be employed to prevent visible dust beyond the site boundaries. The primary mitigation measure would involve water spraying of exposed areas, operating areas, and paved/unpaved roads.

Vehicular Sources. Potential vehicular source impacts are associated with both on-site vehicles and off-site vehicle sources (mobile source emissions).

On-Site Vehicular Emissions. Table 4.6-8 summarizes the emissions from operation of on-site vehicles.

Off-Site Vehicular Emissions. Mobile source emissions, also due to engine combustion exhausts from project-related traffic, would affect roadside air quality concentrations. Mobile source emissions were based on SCAQMD guidelines and are presented in Table 4.6-9. Estimates of CO were calculated with CALINE4 for intersections near the potential Blind Canyon site. Two traffic scenarios for the potential landfill site in the year 2013 were considered: baseline traffic; and baseline plus 16,500 TPD case.

Model Input. Worst-case meteorological conditions were used to predict 1-hour average pollutant concentrations from off-site CO emissions associated with mobile sources. These included a wind speed of 0.5 meters per second, G-stability (very stable), and a model-determined worst case wind direction. Emission factors for CO were estimated with the California Air Resources Board EMFAC7PC model.

Estimated Project Impacts. Baseline traffic impacts are estimated impacts due to existing traffic conditions projected in the year 2013. Table 4.6-10 presents CO concentration estimates.

Table 4.6-7 Fugitive Dust (PM₁₀) Emissions from the Potential Blind Canyon Landfill Site

Emission source	Emission rate at 16,500 TPD (lb/day)
Wind erosion	
Exposed soil ^a	814
Storage pile ^b	5.50
Batch drop of refuse ^c	9.98
Grading (heavy construction) ^d	282
Truck travel	
Unpaved roads ^e	6,311
Paved roads ^f	2,427

^aExposed soil areas are fill areas and were provided by Brown and Caldwell.

^bStorage pile areas were calculated from active area data provide by Sanitation Districts.

^cEmissions from batch drops of refuse were dependent on the tonnage of refuse being dropped throughout an 8-hour day, 6 days per week operating schedule.

^dGrading areas provided by the Sanitation Districts.

^eEmissions from trucks traveling on unpaved roads were determined by assuming round trip unpaved road distances measured from the face of the nearest landfilling area to the back of the furthest landfilling area.

^fEmissions from trucks traveling on paved roads were dependent on the round trip paved road distance measured from the estimated property line to the face of the nearest landfilling area.

Source: Radian Corporation, 1990.

Table 4.6-8 Emissions from Operation of
On-Site Vehicles at the
Potential Blind Canyon
Landfill Site

Pollutant	Emission rate at 16,500 TPD (lb/day) ^a
Carbon monoxide	465
Exhaust hydrocarbons	87
Nitrogen oxides	1,284
Sulfur dioxide	149
Particulate matter (PM10)	112

^aEmission rates include those from tractors, scrapers, graders, and water trucks operating over an 8-hour per day period. Emission factors for the identified pollutants were obtained from SCAQMD's Air Quality Handbook (April 1987).

Table 4.6-9 Estimated Project Related Off-Site Vehicle Emissions (16,500 TPD) Associated with the Potential Blind Canyon Landfill

Pollutant	Emission factor (grams/mile)	Estimated emissions (lbs/day)
Carbon monoxide	8.37	1,739
Reactive hydrocarbons	2.93	609
Nitrogen oxides	17.20	3,573
Sulfur oxides	3.2	665
Particulates	3.3	685

Note: Estimates are based on emission factors for heavy duty diesel-fueled trucks from SCAQMD's Air Quality Handbook, April 1987, for a 16,500 TPD site assuming an average one-way travel distance of 20 miles.

Table 4.6-10 Estimated Roadside Carbon Monoxide Concentrations
Near the Potential Blind Canyon Landfill

Site/intersection	Peak-hour traffic volume (vehicles/hour) ^a	1-hour average CO concentration ^b	
		ppm	ug/m ³
Blind Canyon/Rocky			
Peak Road - Hwy 118			
Baseline ^a	178	2.3	2,645
16,500 TPD	757	<u>2.8</u>	<u>2,875</u>
Total		5.1	5,520

^aTraffic conditions provided by DKS Associates.

^bCaline results from Radian Corporation, 1990.

Note: Applicable air quality standard - 23,000 ug/m³.

Predicted worst case CO concentrations at the potential Blind Canyon Landfill site are shown to be below the applicable 1-hour air quality standard for a 16,500 TPD fill rate. The projected mobile source impacts showed compliance with applicable ambient air quality standards. Thus, no significant impacts are expected.

Health Risk Assessment. Estimated lifetime excess cancer risk to a hypothetical maximally exposed individual (MEI) is generally considered to be insignificant based on SCAQMD guidelines if the value is less than one in a million. The lifetime cancer risk conservatively resulting from the potential Blind Canyon landfill facility emissions, assuming a 16,500-TPD scenario, yielded a conservative risk estimate of 0.06 in a million. The MEI at the Blind Canyon Landfill site may incur a cancer risk of 0.06 (6 percent) of the allowable one in a million cancer risk from the 16,500 TPD scenario.

The noncarcinogenic chronic and acute hazard indices (HI) for the potential Blind Canyon Landfill site are used to evaluate the additive noncancer health effects from exposure to multiple toxic air contaminants. Acute effects are associated with short-term exposures and are evaluated on the basis of projected 1-hour air quality concentrations; chronic effects are associated with long-term exposures and are evaluated on the basis of projected annual average concentrations. HIs less than 1.0 indicate that an adverse health effect is unlikely by the California Air Pollution Control Officers Association.

The chronic HI for the potential Blind Canyon Landfill is calculated to be 0.0501 for a 16,500 TPD fill rate. From Table 4.6-11, the acute HI is calculated to be 0.0499. These data are well below the significant criteria of 1.0. As a result, the health impacts associated with toxic air contaminants from landfill gas combustion at the potential Blind Canyon site would be insignificant.

Mitigation Measures

None required.

Unavoidable Impacts

None.

Table 4.6-11 Acute Hazard Indices Associated with the Potential Blind Canyon Landfill Site

Chemical	Acute hazard index at 16,500 TPD
1,4-Dichlorobenzene	2.56E-07 ^a
Toluene	1.27E-06
Xylenes	2.44E-06
Methylene chloride	5.33E-07
Chloroform	3.73E-07
1,1,1-Trichloroethane	1.10E-08
Carbon tetrachloride	8.01E-07
1,1-Dichloroethene	4.55E-06
Tetrachloroethene	4.64E-07
Chlorobenzene	2.51E-07
Hydrogen sulfide	4.94E-02
1,1,-Dichloroethane	3.82E-08
Benzyl chloride	3.96E-04
Acetonitrile	1.38E-06
Total acute hazard indices	4.99E-02

^aHazard indices are expressed in powers of 10, i.e., $3.36E-08 = 3.36 \times 10^{-8}$. Indices less than 1.0 indicate that an acute health effect is unlikely by the California Air Pollution Control Officers Association.

Source: Radian Corporation, 1990.

4.6.5 Towsley Canyon

The environmental setting for Towsley Canyon, including meteorology and background air quality, project impacts associated with exposure to criteria pollutants and toxic air contaminants, and mitigation measures are described below.

Setting

The local meteorology and background air quality are described in the following subsections.

Meteorology. Monthly mean minimum temperatures range from 39 degrees Fahrenheit (F) in December/January to 57 degrees F in July, while monthly mean maximum temperatures range from 62 degrees F in January to 91 degrees F in August.¹⁰⁰ These temperatures were measured at Van Nuys Airport in Van Nuys (approximately eight miles south-southwest of Towsley Canyon).

The annual average precipitation, measured at Aliso Canyon/Oat Mountain (approximately 2 miles southwest of Towsley Canyon), is 22.66 inches, 93 percent of which falls between November and April. The average monthly precipitation ranges from 0.01 inches in July to 5.6 inches in January.¹¹⁰

A wind rose created from data measured at Newhall is shown on Figure 4.6-3. Newhall is considered a representative area around Towsley Canyon.¹⁰⁰ As shown in the figure, this wind rose indicates a prevailing wind flow from the south-southeast. Differential surface heating over the elevated terrain of Towsley Canyon produces downslope flows during the nighttime, which merge with the prevailing wind flow.

Air Quality. The SCAQMD-operated air monitoring stations at Newhall and Reseda provided the most representative data on the conditions at Towsley Canyon. Maximum concentrations measured at these sites in 1986, 1987, and 1988 are presented in Table 4.6-12.⁹² The background air quality data show that ozone, carbon monoxide, and PM₁₀ concentrations exceed the applicable limiting air quality standards.

Impacts

As previously indicated, four general source types are expected to result in emissions to the atmosphere from the potential Towsley Canyon Landfill site: landfill gas combustion in flares; fugitive emissions (from both the construction and operation phases); on-site vehicle sources; and off-site, or mobile, vehicle sources.

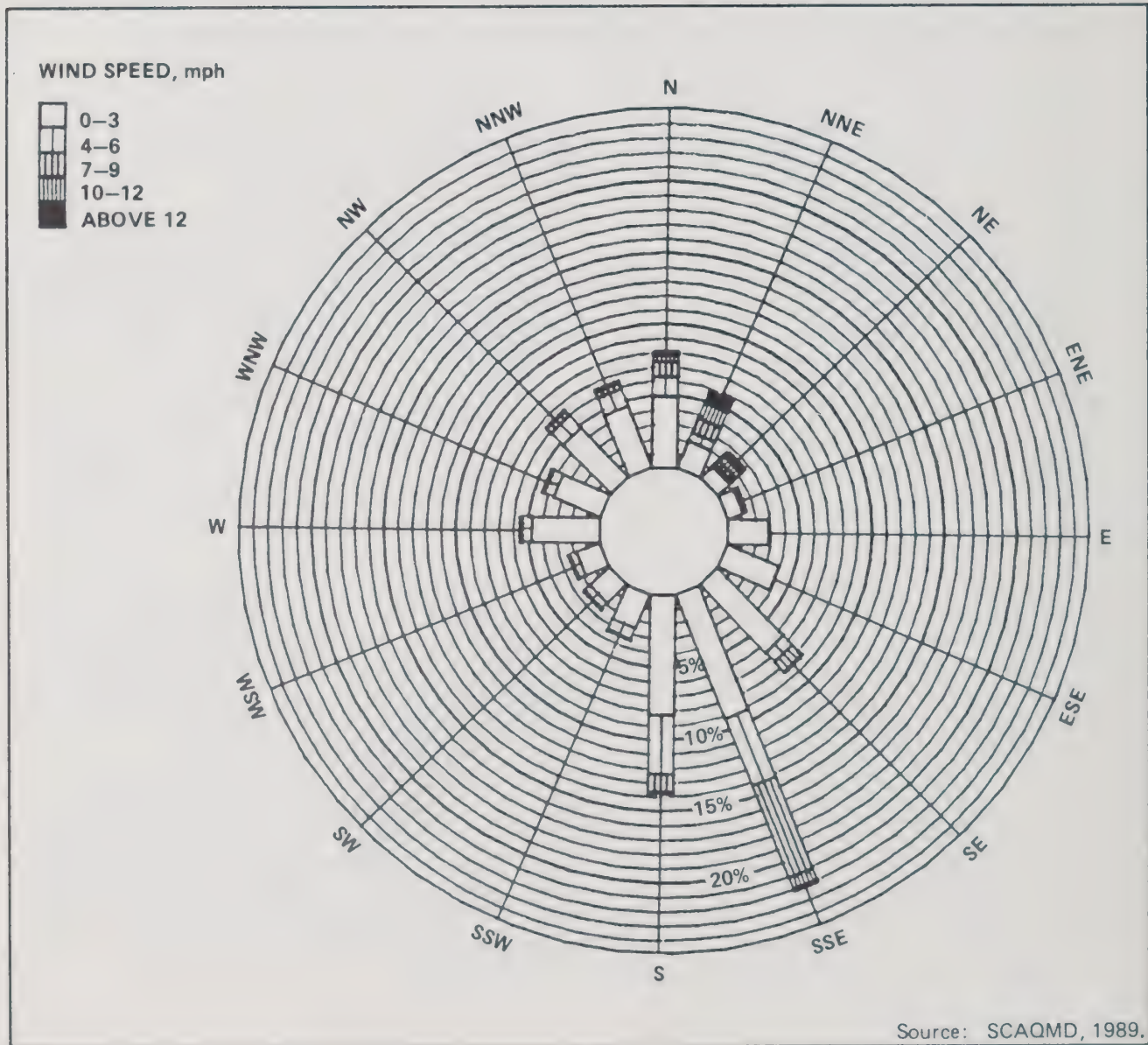


Figure 4.6-3 Wind Rose at Newhall (1970-1975)

Table 4.6-12 Background Ambient Air Quality Data for Towsley Canyon

Pollutant	Averaging period	Background concentrations by year ^{a,b}			Ambient air quality standard
		1986	1987	1988	
Carbon monoxide	1 hour	21,748	17,170	18,314	23,000 ^c
	8-hour	17,971	13,850	15,029	10,000 ^c
Nitrogen dioxide	1 hour	415	283	377	470 ^c
	Annual	53	60	71	100 ^d
Ozone	1 hour	470	412	589	200 ^c
Sulfur dioxide	1 hour	53	52	52	655 ^c
	3-hour	NM	NM	NM	1,300 ^d
	24-hour	37	37	34	131 ^c
	Annual	7.9	5.2	4.5	80 ^d
Lead	30-day	0.21 ^e	0.33 ^f	0.21 ^f	1.5 ^c
	Quarter	0.16 ^e	0.22 ^f	0.15 ^f	1.5 ^d
Sulfates	24-hour	9	15	17	25 ^c
Suspended particulate matter (PM ₁₀)	24-hour	136 ^f	113 ^f	149 ^f	50 ^c
	Annual	51 ^{f,g}	45 ^{f,g}	52 ^{f,g}	30 ^c
Hydrogen sulfide	1 hour	NM	NM	NM	42 ^c
Vinyl chloride	24-hour	NM	NM	NM	26 ^c

^aMeasured at the Newhall monitoring station. All units are in micrograms per cubic meter (ug/m³). NM = not measured.

^bCalifornia Air Resources Board, "California Air Quality Data. Summary of 1986 Air Quality Data," California Air Resources Board, Sacramento, California, 1986.
California Air Resources Board, "California Air Quality Data. Summary of 1987 Air Quality Data," California Air Resources Board, Sacramento, California, 1987.
South Coast Air Quality Management District, "1988 Air Quality," South Coast Air Quality Management District, El Monte, California, 1988.

^cCalifornia ambient air quality standard.

^dNational ambient air quality standard.

^eData from closest representative monitoring station (Reseda).

^fData from closest representative monitoring station (Long Beach).

^gBased on geometric mean of all reported values during the year.

Landfill Gas Combustion. Landfill gas would be collected by a gas collection system and then flared. The design of the flare system is based on the projected quantity of landfill gas generation, which is a function of the fill rate of the landfill. The gas flow for a 16,500 TPD fill rate is approximately 37,200 standard cubic feet per minute (scfm) over a 20-year period. In general, flares of two different designs would be used over the life of the landfill. During the initial phase of the landfill operation, standard flares would be used. The standard flares would then be relegated to a backup role and replaced with new, large capacity flares when sufficient gas is generated. The approximate flare locations are shown on Figure 4.6-4.

Emissions. Combustion of landfill gas in flares would result in the emission of both criteria pollutants and toxic air contaminants. The criteria pollutants emitted would include SO₂, CO, NO_x, PM₁₀, and nonmethane hydrocarbons. Criteria pollutant emission rates were estimated by using source test data from a similar landfill gas-flaring system and the characteristics of standard and large capacity flares to be used.¹⁰⁴ The general design option analyzed involved a six-flare system assuming a fill rate of 16,500 TPD.

Toxic air contaminants evaluated as part of this Program EIR include requirements specified by the SCAQMD under Rule 1150.1 for active landfills. Emission rates were calculated and estimated using the methodology described above. Where the listed TACs were identified in the source test results as being below the limit of detection, a value of one-half the limit of detection for the analytical method used was assumed for the purpose of estimating an emission rate for that particular toxic air contaminant.

Table 4.6-13 summarizes the anticipated pollutant emission rates associated with combustion of landfill gas in the flares proposed for use at the potential Towsley Canyon site.

Air Quality Model Input. Hourly meteorological data used to represent the Towsley Canyon meteorology were obtained from several locations. Wind speeds and wind directions were obtained from Newhall, surface temperatures and cloud cover were obtained from Burbank, and upper air data (mixing heights) were obtained from Ontario.

Estimated Project Impact. The project impacts from the flaring of landfill gas for a 16,500 TPD case was determined, and tabulated in Table 4.6-14. The estimated 16,500 TPD project impacts showed compliance with all

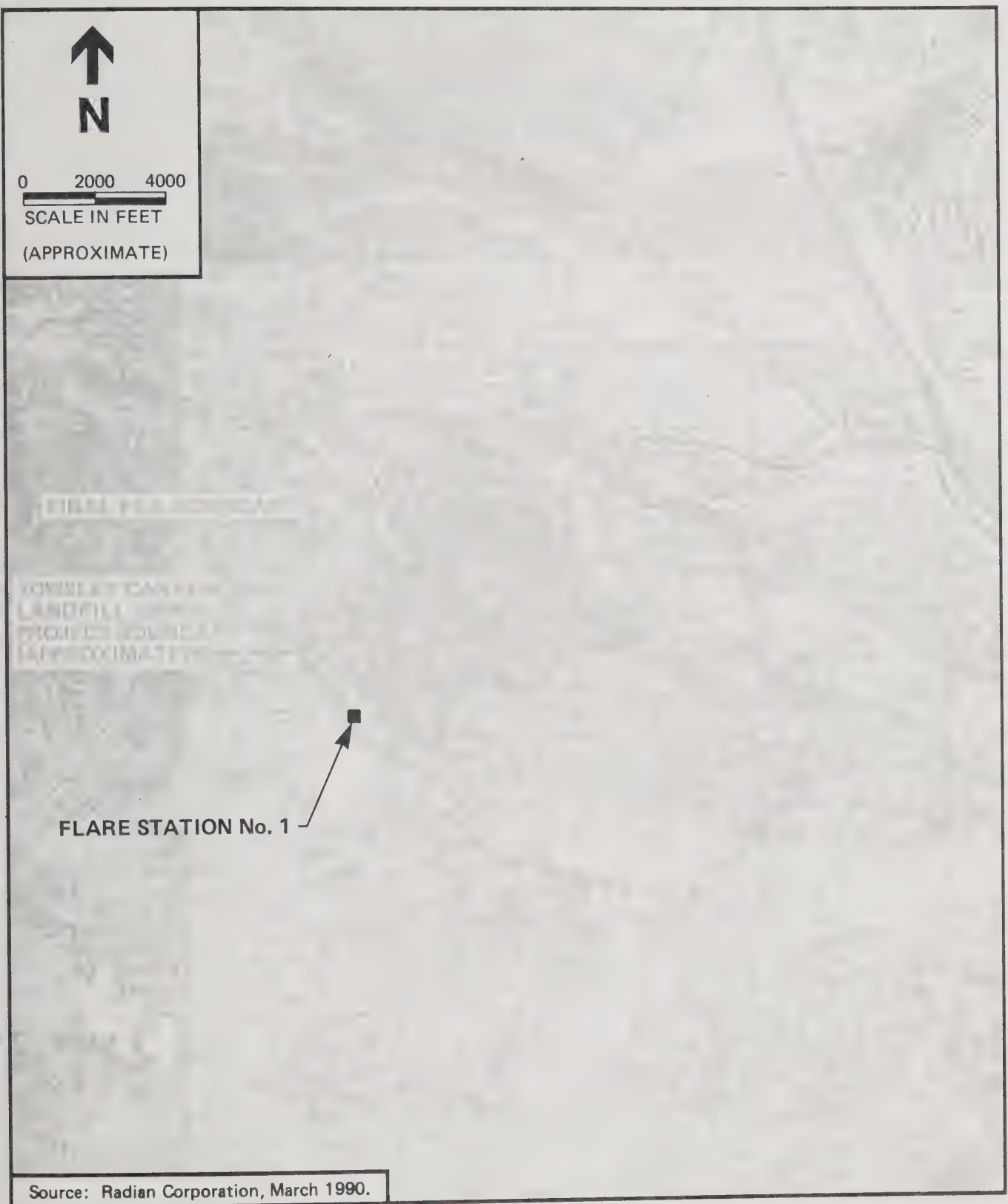


Figure 4.6—4 Flare Station Location at the Potential Towsley Canyon Landfill Site

Table 4.6-13 Anticipated Emissions from Towsley Canyon
Landfill Gas Combustion Source

Pollutant	Emission rate at 16,500 TPD (lbs/day) ^a
Criteria Pollutants	
Sulfur dioxide	4,328
Carbon monoxide	6,155
Nitrogen oxides	1,039
Particulate matter (PM ₁₀)	605
Reactive organic gases	82
Toxic Air Contaminants (TACs)	
Acetonitrile	1.28E-01
Benzene	1.78E-01
Benzyl chloride ^b	2.62E-01
Carbon tetrachloride ^b	3.18E-02
Chlorobenzene ^b	1.16E-01
Chloroform ^b	2.47E-02
Dichlorobenzene ^b	1.52E-01
1,1-Dichloroethane ^b	4.10E-02
1,2-Dichloroethane ^b	2.05E-02
1,1-Dichloroethene	1.21E-01
Hydrogen sulfide	9.17E+02
Methylene chloride	1.23E-01
Tetrachloroethylene	2.06E-01
Toluene	6.30E-01
1,1,1-Trichloroethane ^b	2.77E-02
Trichloroethylene	1.36E-01
Vinyl chloride ^b	1.29E-02
Xylenes	1.41E-01

^aAssumes a large capacity six-flare system.

^bSource test results used for estimates indicate levels below the level of detection (LOD); therefore, emission rates are based on one-half the LOD.

Source: Based on large capacity flare emission data provided by the Sanitation Districts.

Note: TPD = tons per day; lbs/day = pounds per day; and TAC's are expressed in powers of 10, i.e. 5.31 E-05 = 5.31×10^{-5} and 7.25 E + 01 = 7.25×10^1 .

Table 4.6-14 Estimated Project Impacts for Towsley Canyon Landfill with the 16,500 TPD Fill Scenario Using Six Large Capacity Flares

Pollutant	Averaging time	(1) ^a Project impact ^b (ug/m3)	(2) ^a Background concentration (ug/m3)	(3) ^a Total impact ^b (ug/m3)	(4) ^a Measurable impact level ^c (ug/m3)	(5) ^a Most stringent air quality standard (ug/m3)
Carbon monoxide	8-hour	<u>20.70^d</u>	17,970.85	17,991.55	<u>516^d</u>	10000 (state & national)
	1-hour	113.51	21,748.16	<u>21,861.67</u>	1146	<u>23000^d</u> (state)
Nitrogen dioxide	annual	0.16	71.27	<u>71.43^d</u>	5	<u>100^d</u> (national)
	1-hour	19.16	414.82	<u>433.98^d</u>	20	<u>470^d</u> (state)
Sulfur dioxide	annual	0.68	7.85	<u>8.53^d</u>	4	<u>80^d</u> (national)
	24-hour	4.78	36.63	<u>41.41^d</u>	18	<u>131^d</u> (state)
	3-hour	32.29	NM ^h	-	-	1300 (national, secondary)
	1-hour	79.82	52.33	<u>132.15^d</u>	26	<u>655^d</u> (state)
Particulate matter (PM10)	annual (AGM) ^f	<u>0.10^d</u>	50.5	50.60	<u>1^d</u>	30 (state)
	24-hour	<u>0.67^d</u>	149	149.67	<u>2.5^d</u>	50 (state)
	annual (AAM) ^g	0.10	55.7	55.80	-	50 (national)
Sulfates	24-hour	0.96 ^g	17.4	<u>18.36^d</u>	-	<u>25^d</u> (state)

^aFor pollutants that have background concentrations (2) in excess of the air quality standard (5), the project impact (1) must not exceed the measurable impact level (4). For pollutants that have background concentrations (2) lower than the air quality standard (5), the total impact of the project (3) must be less than the air quality standard (5).

^bTotal impact = project impact + background concentration.

^cMeasurable impact levels are guideline levels developed by the SCAQMD for use in determining project significance when background air quality is already in exceedance of the most stringent air quality standard.

^dUnderlined values were used to determine air quality compliance as described in footnote a.

^eAGM = Annual geometric mean.

^fAAM = Annual arithmetic mean.

^gProject impact due to sulfate = 20 percent of project impact due to SO₂.

^hNot measured.

Note: See Figure 4.6-6 for location of flare station.

Source: Radian Corporation, 1990.

applicable ambient air quality standards and SCAQMD measurable impact levels, and thus no significant impacts are expected. No mitigation measures, are therefore, required.

Fugitive Sources. Fugitive emissions would consist of dust and would result from four principal mechanisms during construction and operation of the potential Towsley Canyon Landfill:

- Wind erosion of exposed soil and storage piles;
- Batch dropping of refuse;
- Grading operations; and
- Travel on paved and unpaved roads.

Emissions. Emissions due to wind erosion are a function of the silt content, the frequency of moderate to high winds, and the soil erodibility. Emissions from batch drop operations are a function of the silt content, moisture content, and volume of material dropped as well as the mean wind speed and drop height. Only emissions from dropping refuse have been calculated since emissions from handling soil are incorporated in the emission calculations for the grading operation. Grading emissions are primarily a function of the area being graded. Emissions from unpaved roads are a function of soil and vehicle parameters.

Estimated Project Impacts. Table 4.6-15 summarizes the fugitive dust emissions from the fill rate being evaluated. All reasonable fugitive dust features previously described in Chapter 3 would be employed to prevent visible dust beyond the site boundaries. The primary mitigation measure would involve water spraying of exposed areas, operating areas, and paved/unpaved roads.

Vehicular Sources. Potential vehicular source impacts are associated with both on-site and off-site vehicle (mobile source emissions).

On-Site Vehicular Emissions. Table 4.6-16 summarizes the emissions from operation of on-site vehicles.²¹

Off-Site Vehicular Emissions. Mobile source emissions, also due to engine combustion exhausts from project-related traffic, would affect roadside air quality concentrations. Mobile source emissions were estimated based on SCAQMD guidelines and are presented in Table 4.6-17. Estimates of roadside concentrations for CO was calculated with CALINE4 for intersections near the potential Towsley Canyon site. Two traffic scenarios for the potential landfill site in the year 2013, were considered: baseline traffic; and baseline plus 16,500 TPD case.

**Table 4.6-15 Fugitive Dust (PM10)
Emissions from the
Potential Towsley Canyon
Landfill Site**

Emission source	Emission rate at 16,500 TPD (lb/day)
Wind erosion	
Exposed soil ^a	1,091
Storage pile ^b	7.15
Batch drop of refuse ^c	9.98
Grading (heavy construction) ^d	282
Truck travel	
Unpaved roads ^e	6,824
Paved roads ^f	2,115

^aExposed soil areas are fill areas and were provided by Brown and Caldwell.

^bStorage pile areas were calculated from active area data provide by the Sanitation Districts.

^cEmissions from batch drops of refuse were dependent on the tonnage of refuse being dropped throughout an 8-hour day, 6 days per week operating schedule.

^dGrading areas provided by the Sanitation Districts.

^eEmissions from trucks traveling on unpaved roads were determined by assuming round trip unpaved road distances measured from the face of the nearest landfilling area to the back of the furthest landfilling area.

^fEmissions from trucks traveling on paved roads were dependent on the round trip paved road distance measured from the estimated property line to the face of the nearest landfilling area.

Source: Radian Corporation, 1990.

Table 4.6-16 Emissions from Operation of On-Site Vehicles
At the Potential Towsley Canyon Landfill Site

Emission source	Emission rate at 16,500 TPD (lb/day)
Carbon monoxide	465
Exhaust hydrocarbons	87
Nitrogen oxides	1,284
Sulfur dioxide	149
Particulate matter (PM10)	112

^aEmission rates include those from tractors, scrapers, graders, and water trucks operating over an 8-hour per day period. Emission factors for the identified pollutants were obtained from SCAQMD's Air Quality Handbook (April 1987).

Table 4.6-17 Estimated Project Related Off-Site Vehicle Emissions
(16,500 TPD) Associated with the Potential
Towsley Canyon Landfill

Pollutant	Emission factor (grams/mile)	Estimated emissions (lbs/day)
Carbon monoxide	8.37	1,739
Reactive hydrocarbons	2.93	609
Nitrogen oxides	17.20	3,573
Sulfur oxides	3.2	665
Particulates	3.3	685

Note: Estimates are based on emission factors for heavy duty diesel-fueled trucks from SCAQMD's Air Quality Handbook, April 1987, for a 16,500 TPD site assuming an average one-way travel distance of 20 miles.

Model Input. Worst-case meteorological conditions were used to predict 1-hour average pollutant concentrations from off-site CO emissions associated with mobile sources. These include a wind speed of 0.5 meters per second, G-stability (very stable), and a model-determined worst case wind direction. Emission factors for CO were estimated with the ARB EMFAC7PC model.

Estimated Project Impacts. Baseline traffic impacts are estimated impacts due to existing traffic conditions projected in the year 2013. Table 4.6-18 presents CO concentrations estimates.

Predicted worst case CO concentrations at the potential Towsley Canyon Landfill site (Table 4.6-18) are shown to be below the applicable 1-hour air quality standard for the 16,500 TPD fill rate. The projected mobile source impacts showed compliance with applicable ambient air quality standards. Thus, no significant impacts are expected.

Health Risk Assessment. Estimated lifetime excess cancer risk to a hypothetical MEI at the potential Towsley Canyon Landfill site is generally considered to be insignificant, based on SCAQMD guidelines, if the value is less than one in a million.

The lifetime cancer risk resulting from the potential Towsley Canyon Landfill facility emissions, assuming a 16,500 TPD scenario is 0.06 in a million. The MEI at the Towsley Canyon Landfill site may incur cancer risks of 0.06 (6 percent) of the allowable one in a million cancer risk from a 16,500 TPD scenario.

The noncarcinogenic chronic and acute HIs for the potential Towsley Canyon Landfill site are used to evaluate the additive noncancer health effects from exposure to multiple toxic air contaminants. Acute effects are associated with short-term exposure and are evaluated on the basis of projected 1-hour air quality concentrations; chronic effects are associated with long-term exposures and are evaluated on the basis of projected annual average concentrations. HIs less than 1.0 indicate that an adverse health effect is unlikely by the California Air Pollution Control Officers Association.

The chronic HI for the potential Towsley Canyon Landfill is calculated to be 0.0493 for a 16,500 TPD fill rate. From Table 4.6-19, the acute HI is calculated to be 0.0982.

These data are well below the significance criteria of 1.0. As a result, the health impacts associated with toxic air contaminants emissions from landfill gas combustion at the potential Towsley Canyon Landfill site would be insignificant.

Table 4.6-18 Estimated Roadside Carbon Monoxide Concentrations
Near the Potential Towsley Canyon Landfill

Site/intersection	Peak-hour traffic volume (vehicles/hour) ^a	1-hour average CO concentration ^b	
		(ppm)	(ug/m ³)
Towsley Canyon/ Calgrove - Old Road			
Baseline ^a	1,505	9.5	10,925
16,500 TPD	2,085	<u>0.3</u>	<u>345</u>
Total		9.8	11,270

^aTraffic conditions provided by DKS Associates.

^bCaline results from Radian Corporation, 1990.

Note: Applicable air quality standard--23,000 ug/m³.

Table 4.6-19 Acute Hazard Indices Associated with the Potential Towsley Canyon Landfill Site

Chemical	Acute hazard index at 16,500 TPD
1,4-Dichlorobenzene	5.04E-07 ^a
Toluene	2.50E-06
Xylenes	4.81E-06
Methylene chloride	1.05E-07
Chloroform	7.35E-07
1,1,1-Trichloroethane	2.16E-08
Carbon tetrachloride	1.58E-06
1,1-Dichloroethene	8.97E-06
Tetrachloroethene	9.14E-07
Chlorobenzene	4.94E-07
Hydrogen sulfide	9.74E-02
1,1,-Dichloroethane	7.53E-08
Benzyl chloride	7.80E-04
Acetonitrile	2.72E-06
Total acute hazard indices	9.82E-02

^aHazard indices are expressed in powers of 10, i.e., $6.63\text{E-}08 = 6.63 \times 10^{-8}$.

Indices less than 1.0 indicate that an acute health effect is unlikely by the California Air Pollution Control Officers Association.

Source: Radian Corporation, 1990.

Mitigation Measures

None required.

Unavoidable Impacts

None.

4.6.6 Mission-Rustic-Sullivan Canyons

The environmental setting for Mission-Rustic-Sullivan Canyons, including meteorology and background air quality, project impacts associated with exposure to criteria pollutants and TACs, and mitigation measures are described below.

Setting

The local meteorology and background air quality are described in the following subsections.

Meteorology. Monthly mean minimum temperatures range from 49.7 degrees Fahrenheit (F) in January to 61.9 degrees F in August, while monthly mean maximum temperatures range from 65.3 degrees F in January to 77.5 degrees F in September.⁹¹ These temperatures were measured at the University of California at Los Angeles (UCLA) campus in West Los Angeles (approximately 4.5 miles southeast of Mission-Rustic-Sullivan Canyons).

The annual average precipitation measured at UCLA is 17.39 inches, 95 percent of which falls between November and April. The average monthly precipitation ranges from 0.01 inches in July to 4.39 inches in January.¹⁰⁰

A wind rose of data measured at West Los Angeles is shown on Figure 4.6-5.¹⁰¹ This wind rose indicates that winds flow predominantly from the southwest at less than 7 miles per hour. In addition to the wind rose from West Los Angeles, data from two wind monitoring stations used for a 1980 Mission Canyon Environmental Impact Report indicate that, during stable atmospheric conditions, winds predominantly flow from the west-northwest and the north-northwest at average speeds of 1.9 miles per hour and 2.3 miles per hour, respectively. Table 4.6-20 shows the meteorological data from these two wind monitoring stations at Mission Canyon.¹⁶

Air Quality. The SCAQMD-operated air monitoring station at West Los Angeles provided the representative data on conditions at Mission-Rustic-Sullivan Canyons. Maximum concentrations recorded for 1986, 1987, and 1988 are summarized in Table 4.6-21.⁹² The background air quality monitoring data show that ozone, NO₂, and PM₁₀ exceed the applicable limiting air quality standards.

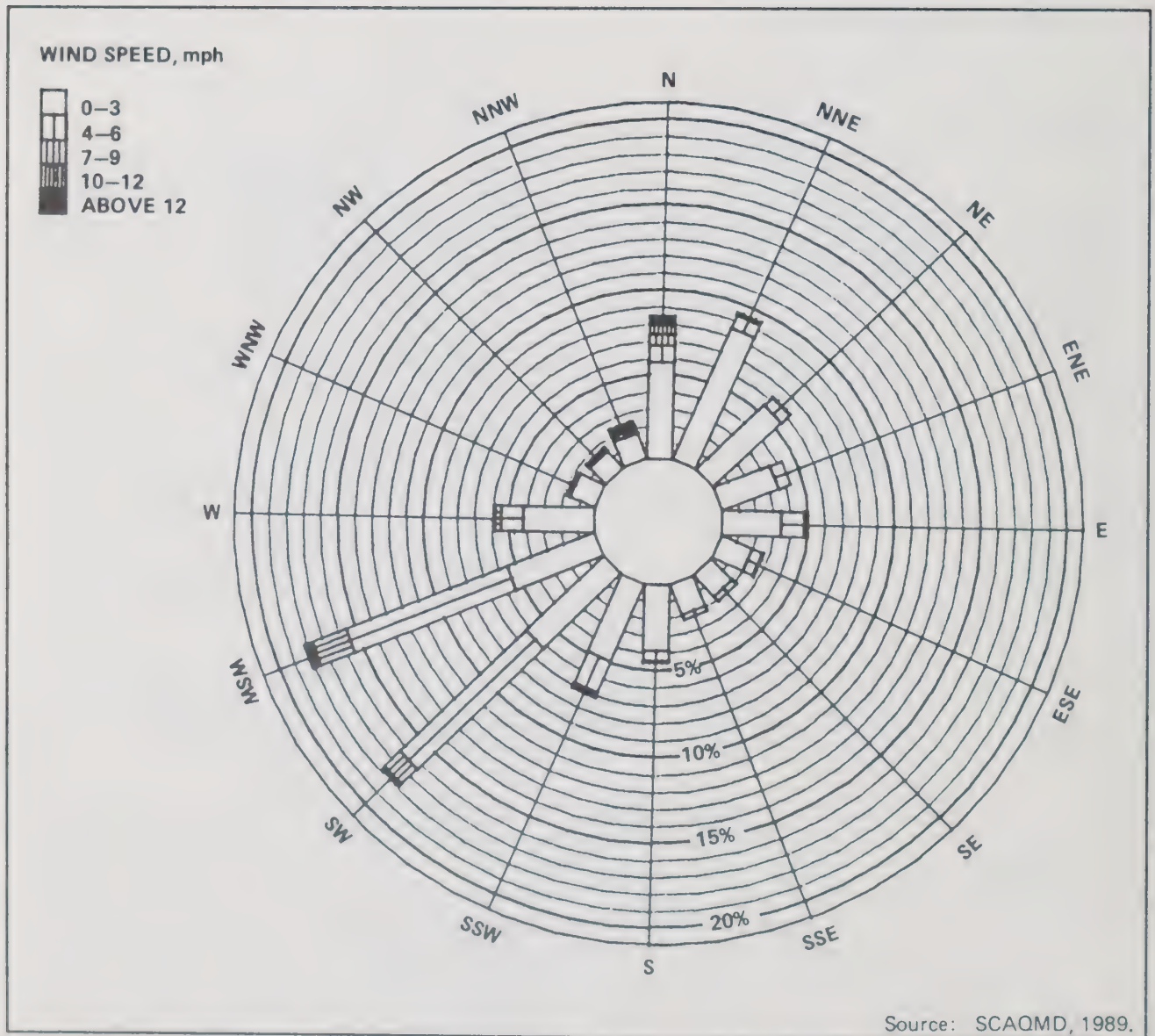


Figure 4.6-5 Wind Rose at West Los Angeles (1963-1975)

Table 4.6-20 Meteorological Data from the Potential Mission Canyon Landfill

Monitoring location ^a	Item	Direction							
		SSW	WSW	WNW	NNW	NNE	ENE	ESE	SSE
A ^b	Speed, mph ^c	1.5	2.4	3.0	2.3	2.5	2.2	3.1	2.5
	Duration, hrs/day	1.6	1.6	4.3	5.5	4.2	2.7	2.0	2.1
B ^d	Speed, mph	1.1	1.6	1.9	1.9	2.1	2.2	1.4	0
	Duration, hrs/day	0.2	2.2	13.4	2.4	1.4	4.1	0.3	0

^aStations are located about 2,000 feet apart along the northern boundary of the landfill site.

^b15-day average.

^c1-hour average.

^d50-day average.

Note: SSW = south-southwest; WSW = west-southwest; WNW = west-northwest, NNW = north-northwest; NNE = north-northeast; ENE = east-northeast, ESE = east-southeast; SSE = south-southeast

Source: Mission Canyon EIR, 1980.

Table 4.6-21 Background Ambient Air Quality Data for Mission-Rustic-Sullivan Canyons

Pollutant	Averaging period	Background concentrations by year ^{a,b}			Ambient air quality standard
		1986	1987	1988	
Carbon monoxide	1 hour	12,951	14,880	17,170	23,000 ^c
	8-hour	9,844	8,585	9,810	10,000 ^c
Nitrogen dioxide	1 hour	453	509	490	470 ^c
	Annual	79	72	65	100 ^d
Ozone	1 hour	392	549	471	200 ^c
Sulfur dioxide	1 hour	53	78	78	655 ^c
	3-hour	NM	NM	NM	1,300 ^d
	24-hour	37	31	34	131 ^c
	Annual	7.9	5.2	5.8	80 ^d
Lead	30-day	0.23	0.33 ^e	0.21 ^e	1.5 ^c
	Quarter	0.16	0.22 ^e	0.15 ^e	1.5 ^d
Sulfates	24-hour	17	15	17	25 ^c
Suspended particulate matter (PM10)	24-hour	136 ^e	113 ^e	149 ^e	50 ^c
	Annual	51 ^{e,f}	45 ^{e,f}	52 ^{e,f}	30 ^c
Hydrogen sulfide	1 hour	NM	NM	NM	42 ^c
Vinyl chloride	24-hour	NM	NM	NM	26 ^c

^aMeasured at the West Los Angeles - Veterans Administration Monitoring Station (Station No. 700091). All units are in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

NM = not measured.

^bCalifornia Air Resources Board, "California Air Quality Data. Summary of 1986 Air Quality Data," California Air Resources Board, Sacramento, California, 1986.
California Air Resources Board, "California Air Quality Data. Summary of 1987 Air Quality Data," California Air Resources Board, Sacramento, California, 1987.
South Coast Air Quality Management District, "1988 Air Quality," South Coast Air Quality Management District, El Monte, California, 1988.

^cCalifornia Ambient Air Quality Standard.

^dNational Ambient Air Quality Standard.

^eData from closest representative monitoring station--Reseda.

^fData from closest representative monitoring station--Long Beach.

Impacts

As previously indicated, four general source types are expected to result in emissions to the atmosphere from the potential Mission-Rustic-Sullivan Canyons Landfill Complex: landfill gas combustion in flares; fugitive emissions (from both the construction and operation phases); on-site vehicle sources; and off-site, or mobile, vehicle sources.

Landfill Gas Combustion. Landfill gas would be collected by a gas collection system and then flared. The design of the flare system based on the projected quantity of landfill gas generation which is a function of the fill rate of the landfill. The gas flows at 6,000 TPD, and 16,500 TPD fill rates are 6,900, and 37,200 standard cubic feet per minute (scfm), respectively. In general, flares of two different designs would be used over the life of the landfill. During the initial phase of the landfill operation, standard flares would be used. The standard flares may then be relegated to a backup role and replaced with new, large capacity flares when sufficient landfill gas is generated. The approximate flare locations are shown on Figure 4.6-6.

Emissions. Combustion of landfill gas in flares would result in the emission of both criteria pollutants and TACs. The criteria pollutants emitted would include SO₂, CO, NO_x, PM₁₀, and nonmethane hydrocarbons. Criteria pollutant emission rates were estimated by using source test data from a similar landfill gas flaring system and the characteristics of standard and large capacity flares to be used in this potential landfill project.¹⁰⁴ A combined Mission Canyon-Rustic Sullivan Canyon design option was analyzed, considering the initial operation of Mission Canyon at a fill rate of 6,000 (four-flare system) TPD for 12 years, then the commencement of operation of Rustic-Sullivan Canyon at a 16,500 (four-flare system) TPD fill rate. One Rustic-Sullivan Canyon only design option was also analyzed involving a six-flare system assuming a fill rate of 16,500 TPD.

Toxic air contaminants evaluated as part of this Program EIR include those specified by the SCAQMD under the requirements of SCAQMD Rule 1150.1 for active landfills. Emission rates were calculated using source test data from a similar landfill gas flaring system and the design characteristics of the flares to be used in this proposed project.¹⁰⁴ Emission rates were estimated for the design options described above. Where the listed toxic air contaminants were identified in the source test results as being below the limit of detection, a value of one-half the

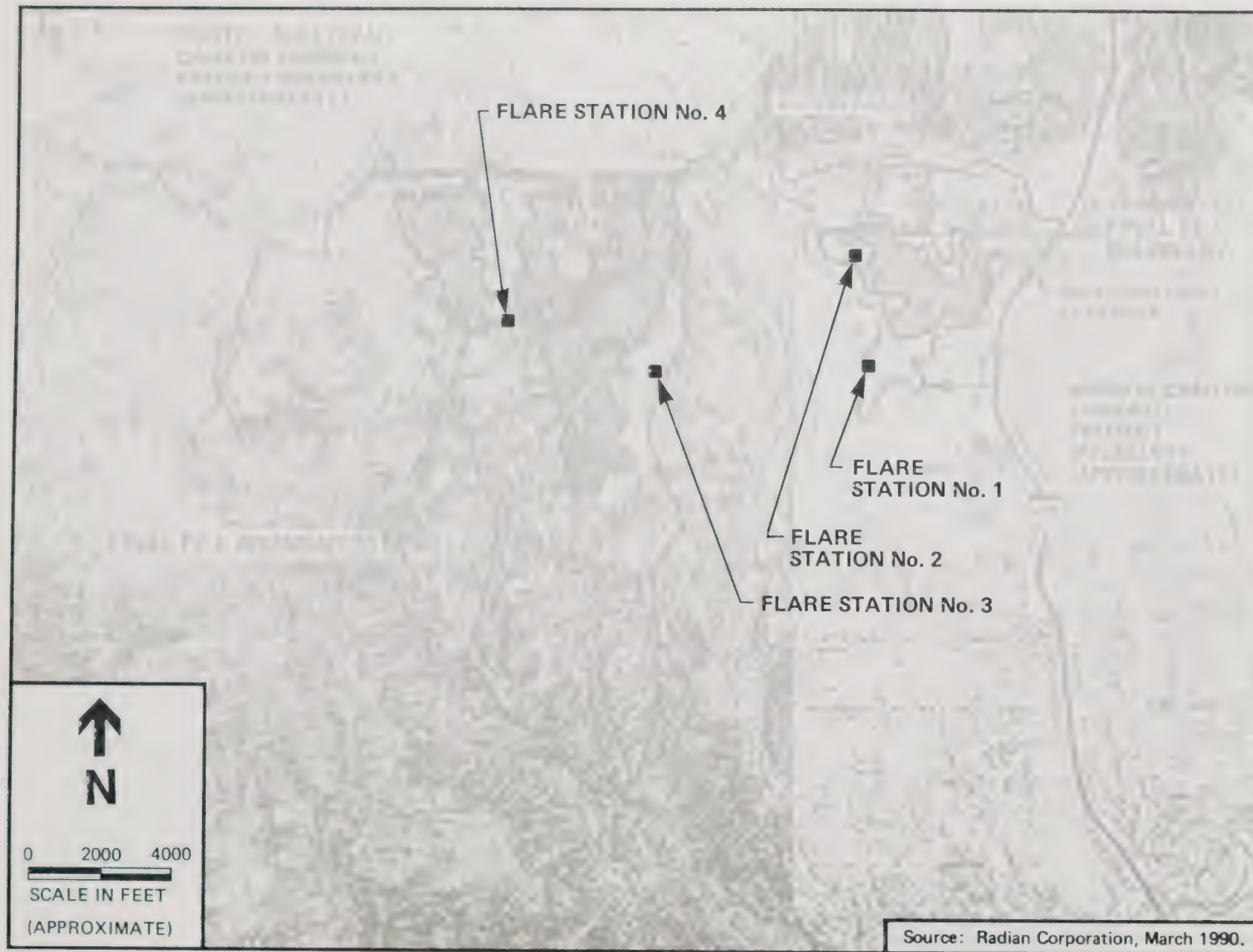


Figure 4.6-6 Flare Station Locations at the Potential Mission-Rustic-Sullivan Canyons Landfill Sites

limit of detection for the analytical method used was assumed for the purpose of estimating an emission rate for that particular toxic air contaminants.

Tables 4.6-22, 4.6-23, and 4.6-24 summarize the anticipated pollutant emission rates associated with combustion of landfill gas in the flares proposed for use at the potential Mission-Rustic-Sullivan Canyons Landfill Complex.

Air Quality Model Input. Hourly meteorological data used to represent the Mission-Rustic-Sullivan Canyons meteorology were obtained from several locations. Wind speeds and wind directions were obtained from West Los Angeles; surface temperatures and cloud cover were obtained from Burbank; and upper air data (mixing heights) were obtained from Ontario.

Estimated Project Impacts. The project impacts from the flaring of landfill gas for the combined Mission-Rustic-Sullivan and Rustic-Sullivan only cases were determined, and are tabulated in Tables 4.6-25 and 4.6-26, respectively. The estimated project impacts showed compliance with all applicable ambient air quality standards and SCAQMD measurable impact levels, and thus no significant impacts are expected. No mitigation measures, are therefore, required.

Fugitive Sources. Fugitive emissions would consist of dust and would result from four principal mechanisms during construction and operation of the potential Mission-Rustic-Sullivan Landfill Complex:

- Wind erosion of exposed soil and storage piles;
- Batch dropping of refuse;
- Grading operations; and
- Travel on paved and unpaved roads.

Emissions. Emissions due to wind erosion are a function of the silt content, the frequency of moderate to high winds, and the soil erodibility. Emissions from batch drop operations are a function of the silt content, moisture content and volume of material dropped as well as the mean wind speed and drop height. Only emissions from dropping refuse have been calculated since emissions from handling soil are incorporated in the emission calculations for the grading operation. Grading emissions are primarily a function of the area being graded. Emissions from unpaved roads are a function of soil and vehicle parameters.

Table 4.6-22 Anticipated Emissions from Mission Canyon Landfill Gas Combustion Source

Pollutant	Emission rate at 6,000 TPD (lbs/day) ^{a,c}
Criteria Pollutants	
Sulfur dioxide	556
Carbon monoxide	2,489
Nitrogen oxides	129
Particulate matter (PM10)	152
Reactive organic gases	30
Toxic Air Contaminants (TACs)	
Acetonitrile	1.35E-02
Benzene	1.88E-02
Benzyl chloride ^b	2.76E-02
Carbon tetrachloride ^b	3.35E-03
Chlorobenzene ^b	1.23E-02
Chloroform ^b	2.61E-03
Dichlorobenzene ^b	1.61E-02
1,1-Dichloroethane ^b	4.32E-03
1,2-Dichloroethane ^b	2.17E-03
1,1-Dichloroethene	1.27E-02
Hydrogen sulfide	9.67E+01
Methylene chloride	1.30E-02
Tetrachloroethylene	2.17E-02
Toluene	6.64E-02
1,1,1-Trichloroethane ^b	2.91E-03
Trichloroethylene	1.43E-02
Vinyl chloride ^b	1.36E-03
Xylenes	1.48E-01

^aAssumes a standard four-flare system.

^bSource test results used for estimates indicate levels below the level of detection (LOD); therefore, emission rates are based on one-half the LOD.

^cMaximum Mission Canyon emissions throughout the 20-year operating period of proposed Mission-Rustic-Sullivan Canyon Landfill Complex.

Note: TPD = tons per day; lbs/day = pounds per day; and TAC's are expressed in powers of 10, i.e., $7.08E-05 = 7.08 \times 10^{-5}$ and $9.67E + 01 = 9.67 \times 10^1$.

Source: Emissions rates calculated from data provided by the Sanitation Districts (1989) for standard flares.

Table 4.6-23 Anticipated Emissions from Rustic-Sullivan Canyon Landfill (16,500 TPD) Gas Combustion Source with the Operation Of Mission Canyon (6,000 TPD)

Pollutant	Emission rate at 16,500 TPD (lbs/day) ^{a,c}
Criteria Pollutants	
Sulfur dioxide	2,885
Carbon monoxide	4,103
Nitrogen oxides	693
Particulate matter (PM10)	403
Reactive organic gases	55
Toxic Air Contaminants (TACs)	
Acetonitrile	8.53E-02
Benzene	1.19E-01
Benzyl chloride ^b	1.75E-01
Carbon tetrachloride ^b	2.12E-02
Chlorobenzene ^b	7.73E-02
Chloroform ^b	1.65E-02
Dichlorobenzene ^b	1.01E-01
1,1-Dichloroethane ^b	2.73E-02
1,2-Dichloroethane ^b	1.37E-02
1,1-Dichloroethene	3.07E-02
Hydrogen sulfide	6.11E-02
Methylene chloride	8.20E-02
Tetrachloroethylene	1.37E-01
Toluene	4.20E-02
1,1,1-Trichloroethane ^b	1.55E-02
Trichloroethylene	9.07E-02
Vinyl chloride ^b	8.60E-03
Xylenes	4.40E-01

^aAssumes a large capacity four-flare system.

^bSource test results used for estimates indicate levels below the level of detection (LOD); therefore, emission rates are based on one-half the LOD.

^cLarge capacity flare emission data for criteria pollutants provided by the Sanitation Districts.

Note: TPD = tons per day; g/s = grams per second; lbs/day = pounds per day; and TAC's are expressed in powers of 10, i.e. $8.85 \text{ E-}05 = 8.85 \times 10^{-5}$ and $1.21 \text{ E} + 02 = 1.21 \times 10^2$. Also, emissions represent the maximum combustion emissions throughout the 20-year waste management period for the proposed Mission-Rustic-Sullivan Canyon Landfill Complex.

Source: Radian Corporation, 1990.

Table 4.6-24 Anticipated Emissions from Rustic-Sullivan Canyons Landfill Combustion Source

Pollutant	Emission rate at 16,500 TPD, (lbs/day) ^{a,b}
Criteria Pollutants	
Sulfur dioxide	4328
Carbon monoxide	6155
Nitrogen oxides	1039
Particulate matter (PM10)	605
Reactive organic gases	82
Toxic Air Contaminants (TACs)	
Acetonitrile	1.28E-01
Benzene	1.78E-01
Benzyl chloride ^C	2.62E-01
Carbon tetrachloride ^C	3.18E-02
Chlorobenzene ^C	1.16E-01
Chloroform ^C	2.47E-02
Dichlorobenzene ^C	1.52E-01
1,1-Dichloroethane ^C	4.10E-02
1,2-Dichloroethane ^C	2.05E-02
1,1-Dichloroethene	1.21E-01
Hydrogen sulfide	9.17E+02
Methylene chloride	1.23E-01
Tetrachloroethylene	2.06E-01
Toluene	6.30E-01
1,1,1-Trichloroethane ^C	2.77E-02
Trichloroethylene	1.36E-01
Vinyl chloride ^C	1.29E-02
Xylenes	1.41E+00

^aAssumes a large capacity six-flare system.

^bLarge capacity flare emission data for criteria pollutants provided by the Sanitation Districts.

^cSource test results used for estimates indicate levels below the level of detection (LOD); therefore, emission rates are based on one-half the LOD.

Note: TPD = tons per day; g/s = grams per second; lbs/day = pounds per day; and TAC's are expressed in powers of 10, i.e. $8.85 \text{ E-}05 = 8.85 \times 10^{-5}$ and $1.21 \text{ E} + 02 = 1.21 \times 10^2$. Also, emissions represent the maximum combustion emissions throughout the 20-year waste management period for the proposed Mission-Rustic-Sullivan Canyon Landfill Complex.

Source: Radian Corporation, 1990.

Table 4.6-25 Estimated Project Impacts for the Mission-Rustic-Sullivan Canyons Landfill Complex with the Mission (6,000 TPD) and Rustic-Sullivan (16,500 TPD) Fill Scenarios Using Four Standard and Four Large-Capacity Flares, Respectively

Pollutant	Averaging time	(1) ^a Project impact (ug/m3)	(2) ^a Background concentra- tion (ug/m3)	(3) ^a Total impact ^b (ug/m3)	(4) ^a Measurable impact level ^c (ug/m3)	(5) ^a Most stringent air quality standard (ug/m3)
Carbon monoxide	8-hour	27.39	9,843.9	<u>9,871.29^d</u>	516	<u>10000^d</u> (state & national)
	1-hour	166.75	17,169.6	<u>17,336.35^d</u>	1146	<u>23000^d</u> (state)
Nitrogen dioxide	annual	0.01	79.19	<u>79.29^d</u>	5	<u>100^d</u> (national)
	1-hour	<u>11.11</u>	509.1	<u>520.21</u>	<u>20^e</u>	<u>470</u> (state)
Sulfur dioxide	annual	0.04	7.85	<u>8.29^d</u>	4	<u>80^d</u> (national)
	24-hour	4.54	36.63	<u>41.17^d</u>	18	<u>131^d</u> (state)
	3-hour	17.99	NM ^h	-	-	1300 (national, secondary)
	1-hour	47.26	78.49	<u>125.75^d</u>	26	<u>655^d</u> (state)
Particulate matter (PM10)	annual (AGM) ^e	<u>0.09^d</u>	50.5	50.59	<u>1^d</u>	30 (state)
	24-hour	<u>0.88^d</u>	149	149.88	<u>2.5^d</u>	50 (state)
	annual (AAM) ^f	0.09	55.7	55.79	-	50 (national)
Sulfates	24-hour	0.91 ^g	17.4	<u>18.31^d</u>	-	<u>25^d</u> (state)

^aFor pollutants that have background concentrations (2) in excess of the air quality standard (5), the project impact (1) must not exceed the measurable impact level (4). For pollutants that have background concentrations (2) lower than the air quality standard (5), the total impact of the project (3) must be less than the air quality standard (5).

^bTotal impact = project impact + background concentration.

^cMeasurable impact levels are guideline levels developed by the SCAQMD for use in determining project significance when background air quality is already in exceedance of the most stringent air quality standard.

^dUnderlined values were used to determine air quality compliance as described in footnote a.

^eAGM = Annual geometric mean.

^fAAM = Annual arithmetic mean.

^gProject impact due to sulfate = 20 percent of project impact due to SO₂.

^hNot measured.

Note: See Figure 4.5-2 for location of flare stations. For Mission Canyon, Station No. 1 is assumed and for Rustic-Sullivan, Station No. 2.

Source: Radian Corporation, 1990.

Table 4.6-26 Estimated Project Impacts for Rustic-Sullivan Canyons Landfill
With the 16,500 TPD Fill Scenario Using Six Large Capacity Flares

Pollutant	Averaging time	(1) ^a Project impact (ug/m3)	(2) ^a Background concentra- tion (ug/m3)	(3) ^a Total impact ^b (ug/m3)	(4) ^a Measurable impact level ^c (ug/m3)	(5) ^a Most stringent air quality standard (ug/m3)
Carbon monoxide	8-hour	6.95	9,843.9	<u>9,850.85</u>	516	<u>10000</u> (state & national)
	1-hour	19.57	17,169.6	<u>17,189.17</u>	1146	<u>23000</u> (state)
Nitrogen dioxide	annual	0.14	79.19	<u>79.33</u>	5	<u>100</u> (national)
	1-hour	<u>3.30</u>	509.1	512.40	<u>20</u>	470 (state)
Sulfur dioxide	annual	0.57	7.85	<u>8.42</u>	4	<u>80</u> (national)
	24-hour	2.27	36.63	<u>38.90</u>	18	<u>131</u> (state)
	3-hour	8.87	NM ^h	-		1300 (national, secondary)
	1-hour	13.76	78.49	<u>92.25</u>	26	<u>655</u> (state)
Particulate matter (PM10)	annual (AGM) ^e	<u>0.08</u>	50.5	50.58	<u>1</u>	30 (state)
	24-hour	<u>0.32</u>	149	149.32	<u>2.5</u>	50 (state)
	annual (AAM) ^f	0.08	55.7	55.78	-	50 (national)
Sulfates	24-hour	0.45 ^h	17.4	<u>17.85</u>	-	<u>25</u> (state)

^aFor pollutants that have background concentrations (2) in excess of the air quality standard (5), the project impact (1) must not exceed the measurable impact level (4). For pollutants that have background concentrations (2) lower than the air quality standard (5), the total impact of the project (3) must be less than the air quality standard (5).

^bTotal impact = project impact + background concentration.

^cMeasurable impact levels are guideline levels developed by the SCAQMD for use in determining project significance when background air quality is already in exceedance of the most stringent air quality standard.

^dUnderlined values were to determine air quality compliance as described in footnote a.

^eAGM = Annual geometric mean.

^fAAM = Annual arithmetic mean.

^gProject impact due to sulfate = 20 percent of project impact due to SO₂.

^hNot measured.

Note: See Figure 4.6-6 for location of flare stations.

Source: Radian Corporation, 1990.

Estimated Project Impacts. Table 4.5-27 summarizes the fugitive dust emissions from the fill rates being evaluated. All reasonable fugitive dust features previously described in Chapter 3 would be employed to prevent visible dust beyond the site boundaries. The primary mitigation measure would involve water spraying of exposed areas, operating areas, and paved/unpaved roads.

Vehicular Sources. Potential vehicular source impacts are associated with both on-site and off-site vehicle (mobile source emissions).

On-site Vehicular Emissions. Tables 4.6-28 and 4.6-29 summarize the emissions from operation of on-site vehicles.

Off-site Vehicular Emission. Mobile source emissions, also due to engine combustion exhausts from project-related traffic, would affect roadside air quality concentrations. Mobile source emissions were estimated based on SCAQMD guidelines and are presented in Tables 4.6-30 and 4.6-31. Estimates of roadside concentrations of CO were calculated with CALINE4 for intersections near the proposed Mission-Rustic-Sullivan Canyon sites. Two traffic scenarios for each site in the year 2013 were considered: baseline traffic and baseline plus 16,500 TPD case.

Model Input. Worst-case meteorological conditions were used to predict 1-hour average pollutant concentrations from off-site CO emissions associated with mobile sources. These included a wind speed of 0.5 meters per second, G-stability, and a model-determined worst case wind direction. Emission factors for CO were estimated with the California Air Resources Board EMFAC7PC model.

Estimated Project Impacts. Baseline traffic impacts are estimated impacts due to existing traffic conditions projected in the Year 2013. Table 4.6-32 presents CO concentration estimates.

Predicted worst case CO concentrations at the proposed Mission-Rustic-Sullivan site are shown to be below the applicable 1-hour air quality standard for a 16,500 TPD fill rate. The projected mobile source impacts showed compliance with applicable ambient air quality standards. Thus, no significant impacts are expected.

Health Risk Assessment. Estimated lifetime excess cancer risks to a hypothetical MEI are generally considered to be insignificant based on SCAQMD guidelines, if the value is less than one in a million.

Table 4.6-27 Fugitive Dust (PM10) Emissions from the Potential Mission-Rustic-Sullivan Canyons Landfill

Emission source	Rustic-Sullivan Canyon emission rate (lb/day)	Mission Canyon emission rate (lb/day)
	16,500 TPD	6,000 TPD
Wind erosion		
Exposed soil ^a	792	314
Storage pile ^b	4.4	2.37
Batch drop of refuse ^c	13.14	4.78
Grading (heavy construction) ^d	282	152
Truck travel		
Unpaved roads ^e	8,927	933
Paved roads ^f	2,721	

^aExposed soil areas are fill areas and were provided by Brown and Caldwell.

^bStorage pile areas were calculated from active area data provided by Sanitation Districts.

^cEmissions from batch drops of refuse were dependent on the tonnage of refuse being dropped throughout an 8-hour day, 6 days per week operating schedule.

^dGrading areas provided by Sanitation Districts.

^eEmissions from trucks traveling on unpaved roads were determined by assuming round trip unpaved road distances measured from the face of the nearest landfilling area to the back of the furthest landfilling area.

^fEmissions from trucks traveling on paved roads were dependent on the round trip paved road distance measured from the estimated property line to the face of the nearest landfilling area.

Source: Radian Corporation, 1990.

Table 4.6-28 Emissions from Operation of On-Site Vehicles at the Potential Mission Canyon Landfill

Pollutant	Emission rate at 6,000 TPD (lb/day)
Carbon monoxide	324
Exhaust hydrocarbons	33
Nitrogen oxides	666
Sulfur dioxide	68
Particulate matter (PM 10)	36

^aEmission rates included are from tractors, scapers, graders, and water trucks operating over an 8-hour per day period. Emission factors for the identified pollutants were obtained from SCAQMD's Air Quality Handbook (April 1987).

Table 4.6-29 Emissions from Operation of On-Site Vehicles at the Potential Rustic-Sullivan Canyons Landfill

Pollutant	Emission rate at 16,500 TPD (lb/day)
Carbon monoxide	465
Exhaust hydrocarbons	87
Nitrogen oxides	1,284
Sulfur dioxide	149
Particulate matter (PM10)	112

^aEmission rates include those from tractors, scrapers, graders, and water trucks operating over an 8-hour per day period. Emission factors for the identified pollutants were obtained from SCAQMD's Air Quality Handbook (April 1987).

Table 4.6-30 Estimated Project Related Off-Site Vehicle Emissions (6,000 TPD) Associated with the Potential Mission Canyon Landfill

Pollutant	Emission factor (grams/mile)	Estimated emissions (lbs/day)
Carbon monoxide	8.37	632
Reactive hydrocarbons	2.93	221
Nitrogen oxides	17.20	1,299
Sulfur oxides	3.2	242
Particulates	3.3	249

Note: Estimates are based on emission factors for heavy duty diesel-fueled trucks from SCAQMD's Air Quality Handbook, April 1987, for a 6,000 TPD site assuming an average one-way travel distance of 20 miles.

Table 4.6-31 Estimated Project Related Off-Site Vehicle Emissions (16,500 TPD) Associated with the Potential Rustic-Sullivan Canyons Landfill

Pollutant	Emission factor (grams/mile)	Estimated emissions (lbs/day)
Carbon monoxide	8.37	1,739
Reactive hydrocarbons	2.93	609
Nitrogen oxides	17.20	3,573
Sulfur oxides	3.2	665
Particulates	3.3	685

Note: Estimates are based on emission factors for heavy duty diesel-fueled trucks from SCAQMD's Air Quality Handbook, April 1987, for a 16,500 TPD site assuming an average one-way travel distance of 20 miles.

Table 4.6-32 Estimated Worst-Case Roadside Carbon Monoxide Concentrations Near the Potential Mission-Rustic-Sullivan Canyons Landfill Complex

Site/intersection scenario ^a	Peak-hour traffic volume (vehicles/hour) ^b	1-hour average CO concentration ^c	
		(ppm)	(ug/m ³)
Mission-Rustic-Sullivan, Mountaingate-Sepulveda			
Baseline	4,426	12.7	14,605
16,500 TPD Rustic-Sullivan with Mission (6,000 TPD)	4,902	<u>0.2</u>	<u>230</u>
Total		12.9	14,835

^aListed scenario based on available traffic data, both overstate the traffic associated with the identified design options.

^bTraffic conditions provided by DKS Associates.

^cCaline results from Radian Corporation, 1990.

Note: Applicable air quality standard--23,000 ug/m³.

The lifetime cancer risk resulting from Mission (6,000 TPD)-Rustic-Sullivan (16,500 TPD) scenario is 2.87×10^{-9} . The lifetime cancer risks resulting from the sole operation of Rustic-Sullivan Canyon is 1.24×10^{-8} for a waste stream scenario of 16,500 TPD.

The noncarcinogenic chronic and acute HIs for each potential landfill design option are used to evaluate the additive noncancer health effects from exposure to multiple toxic air contaminants. Acute effects are associated with short-term exposures and are evaluated on the basis of projected 1-hour air quality concentrations; chronic effects are associated with long-term exposures and are evaluated on the basis of projected annual average concentrations. HIs less than 1.0 indicate an adverse health affect is unlikely by the California Air Pollution Control Officers Association.

Total Mission-Rustic-Sullivan HIs for chronic health effects is 0.0023 (Mission 6,000 TPD; Rustic-Sullivan 16,500 TPD). Total HIs for chronic health effects from the sole operation of Rustic-Sullivan Canyon is 0.0013 (16,500 TPD). As shown on Table 4.6-33, the total acute HIs for the Mission-Rustic-Sullivan operations are 0.00633 (Mission 6,000 TPD; Mission-Rustic-Sullivan 16,500 TPD). As shown on Table 4.6-34, the total acute HI from the sole operation of Rustic-Sullivan Canyon is 0.0021 (16,500 TPD). These data are well below the significance criteria of 1.0. As a result, the health impacts associated with TAC emissions from landfill gas combustion at the proposed Mission-Rustic-Sullivan site would be insignificant.

Mitigation Measures.

None required.

Unavoidable Impacts.

None.

4.5.7 Cumulative Impacts

The California Environmental Quality Act (CEQA) requires that the environmental impact of a proposed project not only be considered alone but also in connection with the effects of other current projects and the effects of probable future projects. This section discusses regional cumulative criteria pollutant impacts that may be associated with the proposed landfill projects. Criteria pollutants are defined by state or federal ambient standards as having acceptable levels in the surrounding air.

Table 4.6-33 Acute Hazard Indices Associated with the Operation of the Potential Mission and Rustic-Sullivan Canyons Landfill Sites

Chemical	Acute hazard index at Mission (6,000 TPD)/ Rustic-Sullivan (16,500 TPD) ^a
1,4-Dichlorobenzene	3.24E-08
Toluene	1.61E-07
Xylenes	3.10E-07
Methylene chloride	6.76E-08
Chloroform	4.73E-08
1,1,1-Trichloroethane	1.39E-09
Carbon tetrachloride	1.02E-07
1,1-Dichloroethene	5.78E-07
Tetrachloroethene	5.88E-08
Chlorobenzene	3.18E-08
Hydrogen sulfide	6.28E-03
1,1,-Dichloroethane	4.85E-09
Benzyl chloride	5.02E-05
Acetonitrile	1.75E-07
Total acute hazard indices	6.33E-03

^aHazard indices are expressed in powers of 10, i.e., $2.94\text{E}-08 = 2.94 \times 10^{-8}$. Indices less than 1.0 indicate that an acute health effect is unlikely by the California Air Pollution Control Officers Association.

Source: Radian Corporation, 1990.

Table 4.6-34 Acute Hazard Indices Associated with the
Sole Operation of the Potential Rustic-Sullivan
Canyons Landfill Site

Chemical	Acute hazard index at 16,500 TPD ^a
1,4-Dichlorobenzene	1.08E-08
Toluene	5.35E-08
Xylenes	1.03E-07
Methylene chloride	2.25E-08
Chloroform	1.57E-08
1,1,1-Trichloroethane	4.63E-10
Carbon tetrachloride	3.38E-08
1,1-Dichloroethene	1.92E-07
Tetrachloroethene	1.96E-08
Chlorobenzene	1.06E-08
Hydrogen sulfide	2.09E-03
1,1,-Dichloroethane	1.61E-09
Benzyl chloride	1.67E-05
Acetonitrile	5.81E-08
Total acute hazard indices	2.10E-03

^aHazard indices are expressed in powers of 10, i.e.,
1.41E-08 = 1.41×10^{-8} . Indices less than 1.0 indicate
that an acute health effect is unlikely by the California
Air Pollution Control Officers Association.

Source: Radian Corporation, 1990.

Regional cumulative emission impacts for criteria pollutants were evaluated first. The projected emissions from the proposed new landfills were compared with existing emissions from all landfills in Los Angeles County and with emissions from all sources in Los Angeles County to determine the emissions growth that would be attributable to the proposed landfills.

The cumulative criteria pollutant air quality effects of the proposed landfills were then examined by evaluating overlapping impacts from landfills that are reasonably close to each other. Cumulative air pollutant dispersion modeling was performed and the resulting impacts compared to ambient standards, measurable impact levels, and existing background concentrations to determine significance.

Regional Criteria Pollutant Emission Impact Analysis

Table 4.6-35 present comparisons of maximum fill rate scenario emissions of total organic gases (TOGs) and reactive organic gases (ROGs) from the potential landfills with existing, countywide waste disposal operation emissions. At maximum refuse disposal, the emissions growth attributable to the potential landfills would compose 0.5 percent of the landfill category for TOG and 4.2 percent for ROG.

Operation of the three proposed landfills simultaneously would also increase countywide criteria pollutant emissions from all sources. Table 4.6-36 shows countywide emissions growth attributable to the potential landfills for the major criteria pollutants. At maximum refuse disposal, the three new landfills would increase countywide criteria pollutant emissions by 0.01 to 8.2 percent.

Criteria Pollutant Air Quality Impact Analysis

The potential landfills may be sufficiently close that some overlap in air pollutant impact areas could be expected. Local cumulative impacts caused by flaring of landfill gas thus were analyzed for two combinations of the potential landfills presented in this Program EIR and a potential landfill in Elsmere Canyon. These combinations are the Elsmere and Towsley Canyon sites, and the Blind Canyon and Towsley Canyon sites. The results of the cumulative modeling analysis are shown in Tables 4.6-37 and 4.6-38. The analysis performed used the maximum refuse disposal scenario for each landfill; large capacity flares were used for the site specific analysis. The modeling methodology used the ISCST model.

Table 4.6-35 Comparison of Potential Landfill Criteria Pollutant Emissions (Maximum Scenario) with Countywide Waste Disposal Emissions

Source	Scenario	TOG ^a TPD ^c	ROG ^b TPD
Blind Canyon	16,500 TPD	0.32	0.041
Towsley Canyon	16,500 TPD	0.32	0.041
Rustic-Sullivan Canyons	16,500 TPD	0.32	0.041
Total		0.96	0.012
Los Angeles County ^d waste disposal	-	187.09	2.85
Project's percent of waste disposal category	-	0.51	4.2

^aTOG = Total organic gases.

^bROG = Reactive organic gases.

^cTPD = Tons per day.

^dSource: Draft Air Quality Management Plan 1988 Revision, Appendix III-A, 1985 Emissions Inventory, South Coast Air Basin. South Coast Air Quality Management District, 1988.

Note: For the maximum scenario, Mission Canyon operation concluded and Rustic-Sullivan Canyons fully operational.

Table 4.6-36 Comparison of Potential Landfill Criteria Pollutant Emissions (Maximum Scenario) with Countywide Criteria Emissions

Source	Scenario (TPD) ^a	TOG ^b (TPD)	ROG ^c (TPD)	CO ^d (TPD)	NO _x ^e (TPD)	SO _x ^f (TPD)	PM ^g (TPD)
Blind Canyon	16,500	3.2 E-01 ^h	4.1 E-02	11.82	0.69	2.63	1.45
Towsley Canyon	16,500	3.2 E-01	4.1 E-02	11.82	0.69	2.63	1.45
Rustic-Sullivan Canyons	<u>16,500</u>	<u>3.2 E-01</u>	<u>4.1 E-02</u>	<u>11.82</u>	<u>0.69</u>	<u>2.63</u>	<u>1.45</u>
Total		9.6 E-01	1.2 E-01	35.46	2.07	7.89	4.35
Los Angeles County all sources ⁱ		1,303.33	824.56	3,606.88	717.25	96.07	1,030.59
Project's percent of all sources		0.07	0.01	0.98	0.29	8.2	0.42

^aTPD = tons per day.

^bTOG = total organic gases.

^cROG = reactive organic gases.

^dCO = carbon monoxide.

^eNO_x = nitrogen oxides.

^fSO_x = sulfur oxides.

^gPM = particulate matter.

^hEmissions expressed in powers of 10, i.e., 3.2 E-01 = 3.2 X10⁻¹.

ⁱDraft Air Quality Management Plan 1988 Revision, Appendix III-A, 1985 Emissions Inventory, South Coast Air Basin. South Coast Air Quality Management District, 1988.

Note: For maximum scenario, Mission Canyon operation concluded and Rustic-Sullivan Canyons fully operational.

Source: Radian Corporation, 1990.

Table 4.6-37 Cumulative Impacts with Blind (16,500 TPD) and Towsley (16,500 TPD) Canyons Using Six Large-Capacity Flares per Site

Pollutant	Averaging time	Blind project per site (ug/m ³)	Towsley project impact ^a (ug/m ³)	(1) ^b Cumulative projects impact ^a (ug/m ³)	(1) ^b Background concentration (ug/m ³)	(1) ^b Total impact ^a (ug/m ³)	(1) ^b Measurable impact level (ug/m ³)	(1) ^b Most stringent air quality standard (ug/m ³)
Carbon monoxide	8-hour	5.36	5.61	<u>10.97^g</u>	17,970.85	17,981.82	<u>516^g</u>	10,000 (state and national)
	1-hour	7.40	31.32	38.72	21,748.16	<u>21,786.88^g</u>	1,146	<u>23,000</u> (state)
Nitrogen dioxide	Annual	0.01	0.10	0.11	71.27	<u>71.38^g</u>	5	<u>100</u> (national)
	1-hour	1.25	5.29	6.59	414.82	<u>421.36^g</u>	20	<u>470</u> (state)
Sulfur dioxide	Annual	0.05	0.40	0.45	7.85	<u>8.30^g</u>	4	<u>80</u> (national)
	24-hour	1.93	1.41	3.34	36.63	<u>39.97^g</u>	18	<u>131</u> (state)
	3-hour	2.39	11.21	13.60	NM ^c	-	-	1,300 (national, secondary)
	1-hour	5.20	22.02	27.22	52.33	<u>79.55^g</u>	26	<u>655</u> (state)
Particulate matter (PM10) ^a	Annual (AGM) ^d	0.01	0.06	<u>0.07</u>	50.5	50.57	<u>1^g</u>	30 (state)
	24-hour	0.27	0.20	<u>0.47</u>	149	149.47	<u>2.5^g</u>	50 (state)
	Annual (AAM) ^e	0.01	0.06	0.07	55.7	55.77	-	50 (national)
Sulfates	24-hour	-	-	0.67 ^f	17.4	18.07	-	<u>25</u> (state)

^aAll normalized GLC values were determined with ISCST and assuming flat terrain.

Cumulative impacts were determined by summing the individual site impacts which occur during different periods of time.

Blind Project Impact = (Blind GLC contribution to maximum GLC resulting from Blind and Towsley) (emission rate per site).

Towsley Project Impact = (Towsley GLC contribution to maximum GLC resulting from Blind and Towsley) (emission rate per site).

Cumulative Projects Impacts = Blind Project Impact + Towsley Project Impact.

Total Impact = Cumulative Projects Impact + Background Concentration.

^bFor pollutants that have background concentrations (2) in excess of the air quality standard (5), the project impact (1) must not exceed the measurable impact level (4). For pollutants that have background concentrations (2) lower than the air quality standard (5), the total impact of the project (3) must be less than the air quality standards (5).

Measurable impact levels are guideline levels developed by the SCAQMD for use in determining project significance when background air quality is already in exceedance of the most stringent air quality standard.

^cNM = not measured.

^dAGM = Annual geometric mean.

^eAAM = Annual arithmetic mean.

^fCumulative project impact due to sulfate = 20 percent of cumulative project impact due to SO₂.

^gUnderlined values were used to determine air quality compliance as described in footnote a.

Source: Radian Corporation, 1990.

Table 4.6-38 Cumulative Impacts with Elsmere (16,500 TPD) and Towsley (16,500 TPD) Canyons Using Six Large-Capacity Flares per Site

Pollutant	Averaging time	Elsmere project per site (ug/m ³)	Towsley project impact ^a (ug/m ³)	(1) ^b Cumulative projects impact ^a (ug/m ³)	(2) ^b Background concentration (ug/m ³)	(3) ^b Total impact ^a (ug/m ³)	(4) ^b Measurable impact level (ug/m ³)	(4) ^b Most stringent air quality standard (ug/m ³)
Carbon monoxide	8-hour	1.28	0.59	<u>5.87^g</u>	17,970.05	17,916.72	<u>516^g</u>	10,000 (state and national)
	1-hour	9.07	15.66	25.13	21,748.16	<u>21,773.29^g</u>	1,146	<u>23,000</u> (state)
Nitrogen dioxide	Annual	0.01	0.05	0.06	71.27	<u>71.33^g</u>	5	<u>100</u> (national)
	1-hour	1.60	2.64	4.24	414.82	<u>419.06^g</u>	20	<u>470</u> (state)
Sulfur dioxide	Annual	0.03	0.20	0.23	7.85	<u>8.08^g</u>	4	<u>80</u> (national)
	24-hour	0.69	0.97	1.66	36.63	<u>38.29^g</u>	18	<u>131</u> (state)
	3-hour	2.39	5.60	7.99	NM ^c	-	-	1,300 (national, secondary)
	1-hour	6.66	0.01	17.67	52.33	<u>170.00^g</u>	26	<u>655</u> (state)
Particulate matter (PM10) ^a	Annual (AGM) ^d	0.004	0.03	<u>0.034</u>	50.5	50.53	<u>1^g</u>	30 (state)
	24-hour	0.10	0.14	<u>0.24</u>	149	149.24	<u>2.5^g</u>	50 (state)
	Annual (AAM) ^e	0.004	0.03	0.034	55.7	55.73	-	50 (national)
Sulfates	24-hour	-	-	0.054 ^f	17.4	<u>17.45</u>	-	<u>25</u> (state)

^aAll normalized GLC values were determined with ISCST and assuming flat terrain.

Cumulative impacts were determined by summing the individual site impacts which occur during different periods of time.

Elsmere Project Impact = (Elsmere GLC contribution to maximum GLC resulting from Elsmere and Towsley) (emission rate per site).

Towsley Project Impact = (Towsley GLC contribution to maximum GLC resulting from Elsmere and Towsley) (emission rate per site).

Cumulative Projects Impact = Elsmere Project Impact + Towsley Project Impact.

Total Impact = Cumulative Projects Impact + Background Concentration.

^bFor pollutants that have background concentrations (2) in excess of the air quality standard (5), the project impact (1) must not exceed the measurable impact level (4). For pollutants that have background concentrations (2) lower than the air quality standard (5), the total impact of the project (3) must be less than the air quality standards (5).

Measurable impact levels are guideline levels developed by the SCAQMD for use in determining project significance when background air quality is already in exceedance of the most stringent air quality standard.

^cNM = not measured.

^dAGM = Annual geometric mean.

^eAAM = Annual arithmetic mean.

^fCumulative project impact due to sulfate = 20 percent of cumulative project impact due to SO₂.

^gUnderlined values were used to determine air quality compliance as described in footnote a.

Source: Radian Corporation, 1990.

For relatively widespread sources, such as the landfills modeled here, ISCST is most appropriately run in the flat terrain mode. As a result, the cumulative impacts are generally lower than the impacts estimated for individual landfills because maximum impacts would actually occur from plume impaction on the nearby, elevated terrain surrounding each individual landfill.

In summary the cumulative impacts are lower than the insignificant impacts estimated for individual landfills. The estimated project impacts for the two landfill combinations showed compliance with all applicable ambient air quality standards and SCAQMD measurable impact levels, thus no significant impacts are expected.

Mitigation Measures

Since the cumulative air quality impacts of the proposed landfill projects are estimated to be insignificant, no mitigation measures are required.

Conformance of the Proposed Project with the Air Quality Management Plan

For general development projects, defined to include solid waste disposal sites of 40 acres or more, to be found in conformance with the Air Quality Management Plan (AQMP), three criteria must be met. Each of the criteria and associated compliance are discussed below.

1. The project is improving or having a neutral effect on the subregion's jobs/housing balance performance ratio.

The proposed project will not have a growth inducing effect as outlined in Chapter 6, and therefore, would have a neutral effect on the jobs/housing balance. The purpose of the project is to provide the public service of long term, responsible solid waste management for the metropolitan area of Los Angeles County, including waste diversion and environmentally sound disposal for the wastestream generated by the population increases consistent with the AQMP. As such, the project is not directly related to either jobs or housing but would provide support for implementation of AQMP plans, policies, and programs.

2. A project is required to demonstrate that vehicle trips (VT) and vehicle miles traveled (VMT) have been reduced to the greatest extent feasible by implementing transportation demand management strategies.

The impetus for implementing the proposed Integrated System is to avert a waste management crisis through responsible planning. The proposed system assumes a 50 percent reduction in the total wastestream by the year 2000, which will result in overall reduction in vehicles miles traveled by refuse collection vehicles. Should a waste management shortfall occur, that is, if waste generated could not be accommodated by either waste diversion programs or disposal sites, this waste would have to be potentially hauled to a site a much greater distance away which had the capacity to receive the waste. Furthermore, as existing sites close, the waste which was handled by the closed site would then be required to be hauled greater distances as well, to remaining sites, assuming capacity was still available at these sites. Although alternative methods of solid waste management (e.g., waste-by-rail and transfer stations) as discussed in Chapter 5 do have the potential for reducing the air quality impacts from the longer hauls, these methods alone will not provide the long term waste management needs of the county. Only by aggressive diversion and the provision of adequate disposal capacity in the metropolitan area can the impacts from vehicles miles traveled be minimized. Various techniques for further reducing traffic impacts from this activity could be implemented such as off-peak scheduling of refuse vehicles utilizing the proposed sites or 24-hour operation of the landfills.

3. The project's environmental documents should provide an analysis to demonstrate the following:
 - a. That the project will not have a significant negative impact on air quality in the long term.
 - b. That the transportation, land use, and energy conservation control measures are used to the extent possible to mitigate the impact of the project on air quality.
 - c. That the impact of the project on air quality is analyzed on a city or subregional level and regional level.

This section outlines a detailed air quality impact analysis for the proposed landfills. The analysis shows that, as proposed, the use of these sites as landfills will not have a negative impact on either the area surrounding the potential landfills or the metropolitan area when compared to total waste disposal activities. Furthermore, as stated above, implement-

ation of the Integrated System may reduce the impact that would otherwise occur if longer hauls are necessary for refuse disposal.

4.7 NOISE AND VIBRATION

The assessment of noise and vibration impacts is included in this section. Noise is an issue associated with most types of solid waste management activities, including various forms of waste diversion. For the assessment of landfill-related impacts, ambient noise levels were measured at various sensitive locations around each potential site. Project noise levels associated with each component of the project were then developed and compared to ambient levels to assess potential impacts. The findings discussed in this section are based on studies conducted by Marshall Long Acoustics, Inc. (1990).

4.7.1 Regional Environment

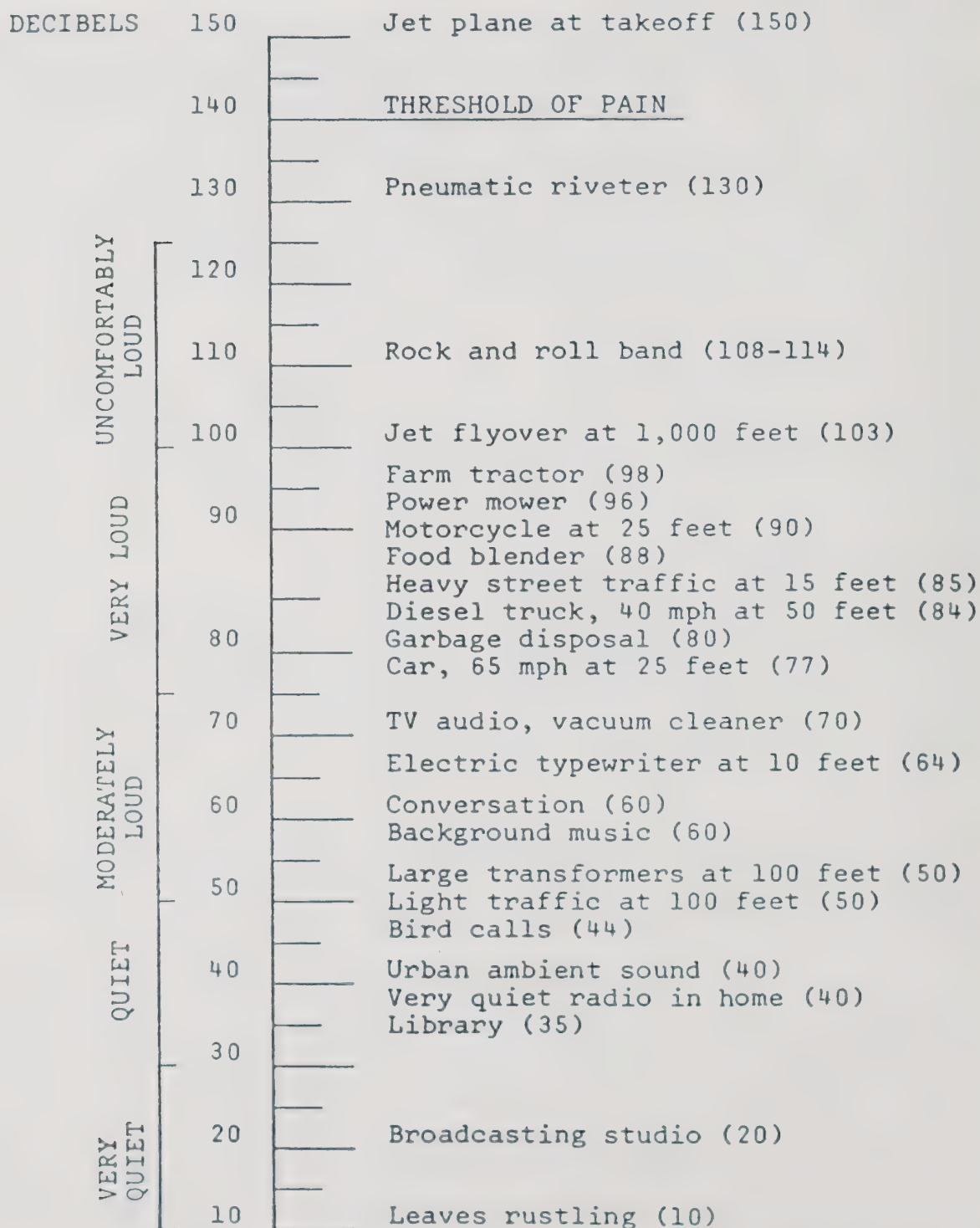
For the assessment of noise and vibration impacts, the regional environment consists of a discussion of the basic characteristics of noise as well as the regulations which establish criteria for assessing the significance of impacts. Each of these topics is discussed below.

Basic Characteristics of Environmental Noise

The human ear is sensitive to a wide range of sound intensities. People hear changes in sound in proportion to the intensities. The decibel (dB) scale is a means of measuring sound, using a logarithmic scale to compress this range. The threshold of human hearing corresponds roughly to 0 dB. Figure 4.7-1 shows the sound level of typical sources encountered in the environment.

The "A" weighting scale, which most closely resembles human hearing, is used in this assessment and is denoted by the symbol (dBA). This weighting takes into account that a normal human ear is more sensitive to sounds around 4,000 hertz and less sensitive to sounds above and below that frequency.

The metrics or systems of measurement that are used to characterize noise levels are all expressed in decibels or dB. Since noise levels are time varying, a number of different types of metrics are used to account for this variation. The most commonly used technique is to average the time varying level based on the energy that is contained within each sample. This process results in the Leq or equivalent noise level. It is defined as the steady level which has the same energy over a given period as the actual varying level. What this means is the noise level is sampled and an average level is determined based on the energy of each sample. Since a difference of 10 dB is ten times the energy, high noise levels



Source: Cole/Mills Associates, 1986.

Figure 4.7-1 Approximate Sound Levels of Common Noises

even if they occur for a short period of time contribute significantly. The Leq level is always higher than the arithmetic average level.

In characterizing long-term environmental noise a second metric is also used. This is called the Ldn or day-night level. Since our sensitivity to noise varies with time of day and we are more sensitive at night, the Ldn system penalizes noise which is made between the hours of 10 p.m. and 7 a.m. in the morning. The penalty involves adding 10 dB to noise level that is measured during this period and then performing the Leq average for 24 hours. The Ldn noise level is recommended by the U.S. Environmental Protection Agency for use in characterizing environmental noise. Both units of measurement, Leq and Ldn, have been used in this analysis.

Regulatory Overview

Noise generation is regulated at the federal, state, and local level. The Congress has established a legal framework for a hierarchy of governmental noise regulations. The system's cornerstone is the Federal Noise Control Act of 1972. This act empowers the Administrator of the Federal Aviation Administration (FAA) to regulate aircraft noise. It also authorizes the Administrator of the Environmental Protection Agency (EPA) to identify other major noise sources and to regulate noise levels from products. In order to avoid areas of conflicting authority once a noise source is regulated by the federal government, state and local agencies may only adopt identical standards insofar as they regulate the same area. Areas unregulated by the federal government are regulated by the states and local government if desired.

Federal and State Regulations. The federal government regulates noise levels in the work place, aircraft noise, and noise emitted by certain products at the time of manufacture. The State of California regulates vehicle noise, acceptable noise levels inside multifamily dwellings, acceptable levels in school classrooms, and airport noise/land use compatibility. Local communities generally regulate land use/noise level compatibility, allowable levels on private property, and levels associated with the use of certain types of sources.

To date, the EPA has identified five products as major noise sources. These are (1) heavy and medium trucks, (2) portable air compressors, (3) crawler tractors (bulldozers) and wheel (front end) loaders, (4) truck-mounted solid waste compactors, and (5) large buses. As of the early 1980s, the federal government had suspended all enforcement of EPA noise regulations.

Both the federal government (EPA) and the State of California regulate allowable noise levels from in-use vehicles operated on the public roadways. A summary of these regulations is shown in Table 4.7-1. Preemption by the federal and state governments leaves to local governments the ability to regulate outside certain bounds. The most common types of local regulation are the planning and zoning type and property line ordinances.

Local Noise Ordinances. Local regulation is usually through a noise ordinance which specifies allowable levels on private property due to noise generated on other private property. Recently, as part of the state requirements to publish Noise Elements of the General Plan in California, standards have also been adopted which set criteria for the compatibility of types of land use and noise levels irrespective of how these levels are generated. During the preparation of a noise element, a community studies the existing literature on noise and the various noise criteria in use throughout the country and determines what is most appropriate to adopt. Noise control policies of Los Angeles and Ventura Counties and the City of Los Angeles are briefly summarized below.

Los Angeles County. Table 4.7-2 summarizes the exterior noise standards as contained in the County of Los Angeles Noise Ordinance. The standard set for residential areas during the day is an L_{50} dBA. This may be exceeded 50 percent of the time. A stair step ordinance above 50 dB is also included allowing levels of 55 dB for 15 minutes per hour and 60 dB for 5 minutes per hour, etc. For time varying sources, this nearly equal to the L_{eq}^{55} recommended by the EPA. For steady sources, L_{50} and the L_{eq}^{55} are virtually the same, so the County's ordinance is somewhat stricter than the EPA's recommendations.

While there are other cities in the areas near Blind and Towsley Canyons, all of the affected residential areas are in the unincorporated County of Los Angeles. The L_{eq} level of 55 dBA has been selected as a guideline for the design of measures to mitigate potential noise impacts resulting from the potential landfill sites. Where ambient levels are clearly above 55 dBA, the existing ambient will be the basis for mitigation design.

Ventura County. The Ventura County policy pertaining to permissible noise levels (216.21(3)) states that "Noise generators proposed to be located near any noise-sensitive use shall incorporate noise control measures so that outdoor noise levels at the noise receptor do not exceed: 79

Table 4.7-1 Federal and State Noise Regulations for Motor Vehicles
On Public Roadways

Government	Vehicle weight class/type	Operation at posted speeds				New sales	
		Effective date	Under 35 mph ^a	Over 35 mph ^a	Other ^a	Date manufactured	Maximum level ^a
Federal	Interstate only >10,000 lbs GVWR ^b	10/15/75	86	90	ST ^c 88	N/A ^d	N/A
California	GVWR over 6,000 lbs	1/1/73	86	90	LS ^e 82	A1967 ^f	88
						A1972	86
						A1974	83
						A1977	80
						A1987	70
	Motorcycle	N/S ^g	82	86	LS 77	B1970 ^f	92
						A1969	88
						A1972	86
						A1974	80
						A1977	75
						A1987	70
	Other vehicles and combination of vehicles	N/S	76	82	LS 74	A1967	86
						A1972	84
						A1974	80
						A1977	75
						A1987	70

^aAll noise levels in dBA measured at 50 feet unless otherwise noted.

^bGross vehicle weight.

^cStationary test.

^dNot applicable.

^eLevel street.

^fA - after; B - before.

^gNot specified.

Source: Noise Regulation Reporter

Table 4.7-2 Exterior Noise Standards for Los Angeles County

Noise zone	Designated noise zone land use	Time interval	Exterior noise level,db
I	Noise sensitive area	Anytime	45
II	Residential properties	7:00 a.m. - 10:00 p.m. (daytime)	50
		10:00 p.m. - 7:00 a.m. (nighttime)	45
III	Commercial properties	7:00 a.m. - 10:00 p.m. (daytime)	60
		10:00 p.m. - 7:00 a.m. (nighttime)	55
IV	Industrial properties	Anytime	70
Standard 1	L_{50} (50% of the time)	30 minutes/hour	Standard
Standard 2	L_{25} (25% of the time)	15 minutes/hour	Standard +5 dB
Standard 3	$L_{8.3}$ (8.3% of the time)	5 minutes/hour	Standard +10 dB
Standard 4	$L_{1.7}$ (1.7% of the time)	1 minute/hour	Standard +15 dB
Standard 5	L_0 (0% of the time)	0 minutes/hour	Standard +20 dB

Note: For a typical noise distribution $L_{eq} \cong L_{25}$. So equivalent limit is about an L_{eq} of 55.

Source: County of Los Angeles Noise Ordinance No. 11,773.

1. L_{eq} 1 hour of 55 dB(A) or ambient noise level plus 3 dB(A), whichever is greater, during any hour from 6 a.m.. to 7 p.m.
2. L_{eq} 1 hour of 50 dB(A) or the ambient noise level plus 3 dB(A), whichever is greater, during any hour from 7 p.m. to 10 p.m.
3. L_{eq} 1 hour of 45 dB(A) or the ambient noise level plus 3 dB(A), whichever is greater, during any hour from 10 p.m. to 6 a.m.."

Portions of the potential Blind Canyon Landfill site and access roadway lie within Ventura County. Since the sensitive sites which lie in Ventura County are above the stated noise standards, the policy relevant to the project asserts that any landfill-generated noise should not exceed an L_{eq} of 55 dBA. The Ventura County noise element or ordinance does not define what constitutes a noise-sensitive site; however, it is presumed that it would include all residential areas.

City of Los Angeles. The potential Mission-Rustic-Sullivan Canyons Landfill is located within the City of Los Angeles. Portions of the City of Los Angeles noise ordinance (No. 156363) that are relevant to this project are discussed in this section.

The ordinance contains a property line standard in Section 112.04. This section limits allowable noise levels to 5 dB above the existing ambient level at the property line or a residential site. The ambient is defined in Section 111.03 to be the greater of 50 dB or the actual measured ambient in residential areas. The property line provision limits noise to 55 dBA in residential areas.

A unique provision of the City of Los Angeles Ordinance calls for the arithmetic average of levels to be used. The L_{eq} level is for a given source and is generally higher than the average level. They are equal only for totally steady sources. Therefore, the use of an L_{eq} 55 standard for this EIR is more severe than that which is required by the City of Los Angeles Ordinance.

Criteria Summary. The noise associated with each potential landfill project was compared to a noise level of 55 dBA. The selected level of 55 dBA is compatible with the EPA, Housing and Urban Development, and Federal Highway Administration guidelines and various sections of County and City ordinances.

In the 1930s, Bell Laboratories determined that one decibel was the lowest incremental level perceptible to the average person. Changes in level below that amount are considered negligible and will not cause an adverse impact. Two decibels is generally considered a noticeable change. Six decibels is very significant, and ten decibels represents a doubling, or in the case of decrease a halving of the perceived loudness.

4.7.2 Waste Diversion

Noise is an issue associated with waste diversion activities because of the use of trucks and other machinery for the collection and processing of various solid waste materials.

Impacts and Mitigation Measures

Impacts and mitigation measures associated with noise generation are discussed below. Because specific facility sitings are not included in this Program EIR, the discussion is necessarily general in nature.

Collection and Intermediate Handling. Separate collection of materials such as cans and glass will increase local traffic generated noise levels. This condition, however, can be mitigated by structuring the hours of collection to avoid late night or early morning time periods.

There is some noise associated with recycling activities. Most recycling centers have bins into which the public is encouraged to deposit glass, newspaper, aluminum cans, and other separable items. The sound of the deposition of these products plus the traffic associated with their deposit would generate some local noise impacts. Also, some of these sites use equipment to crush aluminum cans and deposit them in recycling bins. These machines have been measured to produce 67 dBA at 50 feet. Measured noise levels at 50 feet from a glass disposal site were 58 dBA. Thus, a maximum noise level during both operations at 50 feet would be 68 dBA. Noise due to a recycling center can be satisfactorily mitigated using barriers.

The actual noise impact due to these activities will depend on the proximity of recycling centers to sensitive locations and will also depend on the precise mitigation measures implemented.

Noise levels within a materials processing facility can exceed comfortable limits. Proper siting and design of the containing structure(s) can mitigate the noise level external

to the facility. If facilities are too close to residential areas, hours of operation can also be restricted to minimize public disturbance.

A materials processing facility can also be developed and operated as a transfer station facility. A transfer station operation consists of an area where trash trucks bring loads which are dumped into an enclosed or semi-enclosed area. The refuse is loaded into larger trucks for transport to the landfills. A tractor is used to push waste material around and load it into transport trucks. Typical noise sources include:

1. Refuse and Transport Truck Noise. Heavy trucks produce noise levels which are dependent on their velocity. The Department of Transportation Federal Highway Noise Model uses a national reference sound pressure level for heavy trucks of 80 dBA at 50 feet for a 30-mile-per-hour velocity. This level can be used as a typical noise level for transfer trucks moving under load and has been confirmed by direct measurement.

Some refuse vehicles use hydraulic compacting rams to assist in the unloading of refuse. These rams push the debris out of the rear of the vehicle. Typical noise levels are 90 dBA at 50 feet during use of the hydraulic ram system.

2. Crawler Tractor Noise. A crawler tractor used in pit areas can be selected from a number of available models. One of the quietest of these is the Caterpillar D8K model. Typical noise levels are on the level of 80 dBA at 50 feet during operation.
3. Unloading Operations. A typical transfer facility may service as many as 20 trucks an hour. Typically, a maximum of six vehicles would be in operation simultaneously. It is unlikely that all vehicles will be operating at exactly the same time on the site, so the actual noise levels will depend on the duty factor of each vehicle and where it is located. Noise levels also depend on the type of mitigation implemented in the construction of the facility as well as the specific route the trucks use to access the station.

The heavy transfer station vehicles produce somewhat greater noise levels than the normal refuse trucks accessing the site. However, their individual loads are greater than the average truck, reducing the number of vehicles required to produce the same waste stream. It is difficult to assess the exact impact of these trade-offs; however, on balance it is felt that the one will offset the other.

Noise levels within a transfer station facility can exceed local property line limits. Proper siting and design of the containing structure(s) can mitigate the noise levels external to the facility. If facilities are close to residential areas, hours of operation can also be restricted to minimize public disturbance.

Composting consists of accepting yard and garden wastes which are shredded and then placed in windrows or piles. The windrow/pile is then turned periodically to maintain aerobic composting conditions. Noise impacts at composting facilities would be due mainly to vehicles delivering and off-loading waste materials, equipment for shredding the materials into smaller sizes, equipment for turning the windrow/pile, and vehicles distributing composted materials to their ultimate uses. A typical tub grinder for shredding these materials produces 85 dBA at 50 feet as a long-term average level. The actual impact of these devices will depend on the implementation of the design and installation of any mitigation measures in the area of the composting activities.

Ultimate Processing. Regional end use facilities such as paper mills, detinning plants, glass manufacturing plants, aluminum smelters, and plastic regrinders have noise associated with their operation. However, all of these are traditional industries are subject to regulation, and noise producing activities are typically conducted within enclosed structures.

Truck and other vehicular traffic associated with the distribution of recycled materials to users will create noise along arterials over which these vehicles travel. The use of recycled materials, however, offsets somewhat the flow of raw materials which would use similar types of transportation to access these plants. Thus, there is a shifting of impact rather than an additional impact due to these vehicular sources.

Unavoidable Impacts

There should be no significant unavoidable impacts due to waste diversion activities. Use of proper precautions in siting of any facilities combined with appropriate mitigation measures should be effective in reducing noise impacts to acceptable levels.

4.7.3 Issues Common To All Landfills

Noise is typically an issue that is site specific in nature and is discussed for each potential landfill site in the subsections which follow. However, vibration and construction related activities are issues common to all potential landfills and are discussed below.

Vibration

Vibrations from trucks and heavy equipment can potentially damage off-site structures near the area of activity. Distances to the sensitive areas and prevailing soil types are important considerations for assessing the significance of potential vibration impacts.

Setting. As described in Chapter 3, heavy equipment would be needed in the landfill operation. Together with trucks delivering refuse to the site, this equipment would cause vibrations on the surface of the landfill. Based on previous studies, the vibrations, while distinctly noticeable on the fill surface, are not transmitted to solid ground adjacent to the fill. The refuse soil interface dampens the vibrations.

Vibration levels due to landfill vehicles have been studied in detail. Vibration impact due to the passage of traffic or other sources associated with landfill operations must be related to both the method of describing vibration and the standards associated with vibration measurement itself. The normal method of describing the vibration is to describe the amplitude of the motion of the vibration surface (usually the ground in a vertical direction). Three metrics are typically used: (1) the displacement of the surface, (2) the velocity of the surface, and (3) the acceleration of the surface. Of these three metrics, the simplest to use is the velocity, since the sensitivity of persons to velocity does not vary appreciatively with frequency. Human sensitivity to both displacement and acceleration do vary with frequency.

Vibration is distinct from noise in that vibration is structure or earthborne and noise is airborne. Thus, vibration is generally felt rather than heard. Some vibrational effects can be noise-induced: for example, the rattling of windows from aircraft overflights or other noise sources. This phenomenon is related to the coupling of the acoustic energy in frequencies which are close to the resonant frequency of the panel being vibrated.

Metrics and Criteria. There are no standards in place in any of the jurisdictional areas in this study on vibration. Thus, a literature search was undertaken to

ascertain typical reactions to vibrational energy. As with any human reaction, the reaction to vibration is a matter which varies from person to person. A level of peak velocity on the order of 0.01 inches per second has been determined to be barely noticeable to persons.¹¹⁷ Peak velocities are related to the root means squared or RMS velocity by a factor of 0.7 so that the standard chosen to determine impact is a RMS velocity of 0.007 inch per second.

Measurements. Measurements were taken of vibration levels due to landfill vehicles at an existing landfill. All measurements reported in this study were made using a B&K 2511 vibration meter and a type 4370 accelerometer. The accelerometer was attached to a heavy mass placed on the surface of the ground at varying distances from the vehicle stream.

At the landfill site, measurements were made of a typical landfill vehicle stream on a flat portion of ground adjacent to the landfill entrance road. The road was built of hard compressed earth and rock and was relatively rough having several potholes in the vicinity of the measurement site. The data were taken on January 31, 1989, at distances of 50, 100, and 200 feet from the vehicle stream. Measurements were made for approximately 40 minutes to an hour at each distance. The results of the summary are summarized in Table 4.7-3. The table shows that the energy average of the maximum RMS vibration levels range from approximately 0.008 inch per second at 50 feet to around 0.002 inch per second at 200 feet.

It is noted that the heavily loaded vehicles were not those that produced the greatest vibration. Rather it was the large unloaded vehicles which when they hit bumps in the road would bounce up and down in an underdamp condition, that resulted in peak values. The measurements results correlated with the perceptions at the site. Vibrations were noticeable at 50 feet but not at the 100 or 200 feet distances.

Impacts. There would be no significant adverse impacts. Vibration levels from landfill related vehicles are low and sensitive sites do not exist within any zone of influence.

Mitigation Measures. None.

Unavoidable Impacts. None.

Table 4.7-3 Vibration Measurements from a Refuse Traffic Stream

Distance, feet	Energy average of maximum velocity (RMS in/sec.)	Maximum value of maximum velocity (RMS in/sec.)
50	0.0078	0.011
100	0.0048	0.007
200	0.0015	0.0025

Note: All measurements are the maximum vibration levels measured during the passby of individual vehicles.

Source: Marshall Long Acoustics, 1989.

Construction Activities

There would be a variety of construction activities at the potential landfill sites. These activities are necessary to construct roads, buildings, and environmental control systems that include subsurface barriers, stormwater drainage facilities, gas wells, and groundwater monitoring wells.

Setting. A variety of equipment is used during construction activities such as crawler tractors, cranes, mixing pumps, air compressors, backhoes, and portable generators. In order to assess potential impacts, it is important to understand the noise generation characteristics of the equipment. The following baseline noise levels are used on typical equipment.

<u>Quantity</u>	<u>Equipment</u>	<u>Base noise level (50 feet)</u>	<u>Adjusted base (for duty factor/number)^a</u>
2	Dozers D6/D8	79.5	79.5
3	Dump trucks	79	80.8
1	Caterpillar 245 hydraulic excavator	85	82
2	Air compressor	75	78
2	Diesel generators	83	86
1	Boom truck	73.5	70.3
1	Small backhoe	73.5	71.5
1	Clamshell crane	76	<u>77</u>
	Overall		89.6 dBA

^aDuty factor is assumed on-line time.

The remainder of the equipment to be used in association with the construction would generate significantly less noise than the equipment shown above, so that the assumptions may be used to describe the entire operation. An overall duty factor (on-line time) of 80 percent has been assumed.

Impacts. Construction activities typically produce short-term increases in noise levels which are not significant. This section focuses on haul roads and environmental control systems as representative of construction activities and for which some data on measured noise impacts exist.

Roadway Construction. At the initiation of landfill construction, haul roads are built connecting the local thoroughfares with the interior of the landfill. These roadways are constructed using heavy equipment such as crawler-tractors, scrapers, trucks and graders. Since the haul roads must be constructed before any mitigation measures can be installed, this equipment will generate noise which will be for a short time unmitigable. The loudest of these pieces of equipment is the crawler-tractor having a maximum level of 89.5 dBA at 50 feet. Impacts will occur at the points of closest approach of the haul roads to sensitive sites. This would include Towsley Canyon Park for the Towsley Canyon Landfill and the upper end of Mandeville Canyon homes for the Rustic-Sullivan Canyon area. The worst-case, short-term noise levels at the points of closest approach, which are about 500 feet, would be around 67 to 68 dBA for the period of construction of the roadway. This level would be expected for short-term periods of up to 4 weeks for perhaps 20 percent of the time during the roadway construction. The impacts though adverse are considered short term in nature and are associated with the construction of the project only.

Landfill On-Site Activity. In order to quantify the noise from vehicles and equipment associated with the potential landfills, the model developed by Marshall Long Acoustics for the Mission Canyon EIR prepared by the Sanitation Districts in 1980 was used along with additional measurements made on operations at the Puente Hills Landfill.^{81,82}

The noise model was developed by making detailed measurements on the ongoing landfill operations, both on individual pieces of equipment and equipment in aggregate. The types of measurements and data collected varied with the equipment being studied. Individual measurements were taken on several types of tractors and scrapers. Truck noise emissions were characterized by averaging pass-by levels of approximately 1,000 vehicles. The overall effects of the combined operation were assessed with automatic monitoring equipment at a known distance from an observed number of noise sources. Based on the model, the worst-case noise contributor is the crawler tractors and heavy trucks off-loading their loads located on the working landfill zone on a day-to-day basis. Since the model was developed in 1980, steps were taken to assure that it was still valid for equipment currently in use. Measurements were repeated at the Puente Hills Landfill in March of 1990 in order to confirm the accuracy of the previous measurement. The accuracy of the prediction methodology was checked and found to be within 0.5 dB of the measured value.

Gas and Groundwater Monitoring Wells. Part of the landfill construction is the drilling of gas and groundwater monitoring wells. These wells are drilled using small derricks mounted on trucks which typically include a diesel generator mounted on the truck bed.

Measurements have been made of the maximum noise levels from various drill rigs. A typical maximum level was 89.0 dBA at 50 feet. The maximum noise levels occur when the generator is accelerated to lift the pipe or to turn the wellhead. The engine generally idled otherwise.

The period of time over which the well drilling activities might occur at any potential well site could range from 1 hour to 2 working days. Individual wells are drilled approximately every 100 feet on each bench of the landfill. This would result in a noise level for short periods which could be as much as 4 dB higher than the 2,000-ton-per-day (TPD) scenario evaluated for each of the potential landfill sites. For Blind, Towsley, and Rustic-Sullivan Canyons, the addition of 4 dB to the 2,000-TPD L_{eq} level would not significantly affect the impact of these projects. This can be seen by viewing the noise levels at sensitive areas in Table 4.7-4 for Blind Canyon, Table 4.7-8 for Towsley and Table 4.7-16 for Rustic-Sullivan. The additional impact for Mission Canyon is discussed in the Mission Canyon section.

Drainage Control Facilities and Subsurface Barriers. Both interim and permanent drainage control facilities could be constructed at the potential landfill sites. This would result in short term increases in noise levels. Subsurface barriers would be located at the toe of the slope of each landfill at the lowest elevation in the landfill canyon. Consequently, they are generally well shielded from the surroundings by the existing terrain. The resulting noise level at the nearest sensitive land use for each potential landfill is as follows:

<u>Landfill</u>	<u>Nearest sensitive land use</u>	<u>Projected noise level, dBA</u>
Blind	Indian Springs Housing Estates (proposed), 3,000 feet away	35
Towsley	Towsley Canyon Park, along access road	15
Mission Canyon	Residence, 2,800 feet away	44

Projected noise levels are well below ambient levels for these potential landfills. In addition, for Blind Canyon it is doubtful that homes in this Indian Springs Housing Estates location would be developed before the actual construction of the leachate barrier. Thus, construction activity would have no significant impact on the nearest sensitive location.

Noise levels were also calculated for subsurface barrier construction at the Rustic-Sullivan Canyon Landfill site for both the Camp Josepho area and the Mandeville Canyon areas. However, both these areas are considerably removed from the area of the construction (about 9,000 feet) and there would be considerable noise attenuation, making projected noise levels below the threshold of hearing for these activities.

Mitigation Measures. None

Unavoidable Impacts. None

4.7.4 Blind Canyon

The potential Blind Canyon Landfill site is located north of Highway 118, northeast of the City of Simi Valley, and northwest of the community of Indian Wells and Twin Lakes. Portions of the landfill project boundary and the access road lie within Ventura County while the remainder of the project area lies within Los Angeles County.

Setting

In order to assess potential noise impacts from the Blind Canyon Landfill project, information is needed on existing sensitive land uses in the area as well as existing ambient noise levels. To obtain this information, data presented in Section 4.1, Land Use, were reviewed, and appropriate field checks were conducted to identify sensitive land uses. A monitoring program was developed to document ambient noise levels.

Certain adjacent land uses could be affected by the traffic accessing the landfill. Trucks approaching the landfill would travel along Highway 118 and head up a ridge away from immediate residences on Santa Susana Pass on the other side of Highway 118. However, the residences may still be affected by the noise of the trucks passing up that ridge. Another site to consider is the Indian Springs housing development, which is southeast of the site. This expanding area should be noted for its proximity to both the access road and eventually the landfill itself. Finally, any housing bordering Highway 118

could be affected due to its exposure to landfill traffic noise from this road. The review of the land use information indicated that five sites would accurately represent the impacts from both on-site landfill activity and traffic accessing the potential Blind Canyon Landfill. Figure 4.7-2 shows the location of these sites. Table 4.7-4 presents the measured ambient noise levels. As can be seen, local traffic is the major contributor to the ambient noise levels at these sites. Sites 1, 2, and 4 are all near major roads and, therefore, have much higher ambient noise levels.

Site 3 is the proposed Indian Springs housing estates and has been subdivided into Sites 3a and 3b based on proximity to the landfill site and the access road. Site 3a is the closest to the potential landfill area and is at a high point within the proposed tract boundaries. It is, however, remote from the access road. Site 3b is closest to the access road. However, it is at a low elevation relative to the potential landfill area and is well shielded by intervening terrain. The reason the two sites were selected for this one particular development was that one represents the worst case location for landfill loading activities, while the other represents the worst case for haul road activities.

Since Site 3 is not yet developed, the noise level at the site is lower than would actually be experienced in a normally developed neighborhood. In order to better characterize a developed neighborhood, sound level measurements were taken at the end of Poema Street in an adjacent neighborhood. No traffic was present on the street during the measurements, which were taken in a cul-de-sac. The only sounds were from the distant freeway and other lower level activities in the neighborhood along with overflights. The overall L_{eq} level at the site was 46.6 dBA which is relatively typical of a quiet urban site.

Impacts

There are four major sources of potential adverse noise impacts with the Blind Canyon Landfill site. These include landfill on-site activity (disposal operations and earth excavation), traffic, landfill gas flare stations, and landfill construction activities. Landfill construction activities is an issue common to all landfills and was discussed in Section 4.7.3.

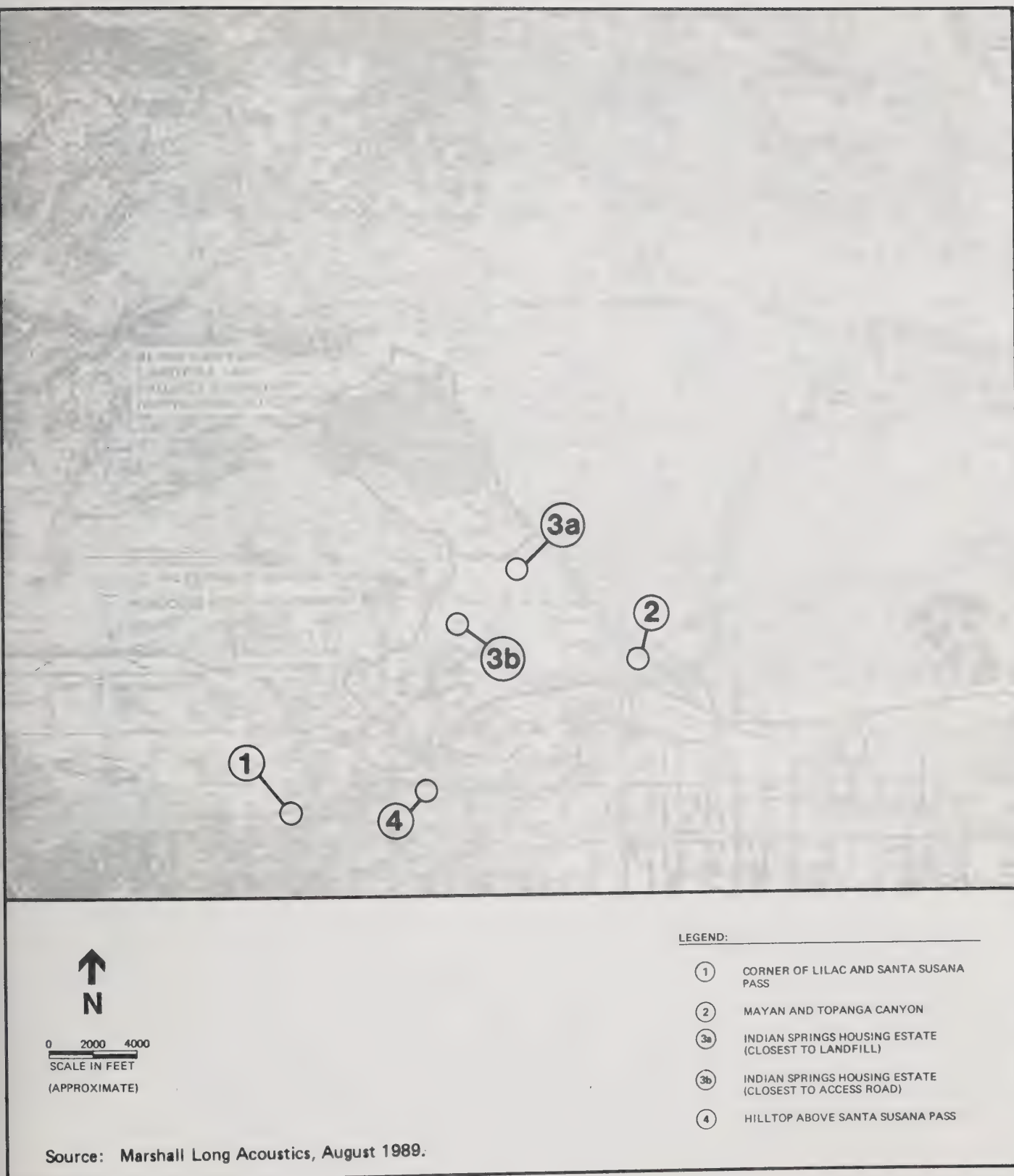


Figure 4.7-2 Ambient Noise Level Monitoring Locations Near the Potential Blind Canyon Landfill Site

**Table 4.7-4 Ambient Noise Levels in the Vicinity of the
Blind Canyon Landfill Project**

Site ^a	Location	Ambient Range	noise level, dBA ^b			Source
			L _{eq}	L _{dn}	Date	
1	Corner of Lilac/ Santa Susana Pass	52-73	63.8	65	6/2/89	Traffic from Santa Susana Pass
2	Mayan & Topanga Cyn Canyon (Twin Lakes Next to Highway)	60-74	67.8	69.2	8/17/89	Highway 118 traffic
3a	Future Indian Springs Housing Estates (based on existing housing tract, end of Poema) ^c	35-58	46.6	53.0	3/7/90	General background measured in a nearby built-out area, end of Poema Street
3b	Future Indian Springs Housing Estates (based on existing housing tract, end of Poema) ^c	38-58	46.6	53.0	3/7/90	General background measured in a nearby built-out area, end of Poema Street
4	Hilltop above Santa Susana Pass	54-64	59.4	60.5	6/20/89	Distant Highway 118

^aSee Figure 4.7-2 for location of sites.

^bMeasurements were taken using a B&K 2230 sound level meter for about 20 minutes at each location.

^cSite 3a is most affected by traffic. Site 3B is most affected by landfill unloading activities

Source: Marshall Long Acoustics, August 1989.

Landfill On-Site Activity. Calculations were carried out at all of the sensitive sites for the potential Blind Canyon Landfill site and are presented in Table 4.7-5. The table shows the effect of on-site landfill activity on noise levels at each of the sensitive sites under different waste stream scenarios (2,000 and 16,500 TPD). The table also shows the various attenuation mechanisms affecting the landfill noise traveling to the sensitive sites.

Noise traveling over large distances is affected by phenomena such as air absorption, attenuation from natural topography, and attenuation due to geometric spreading. All of these would reduce the noise levels actually heard at each sensitive site. For example, in the case of the house on the corner of Lilac and Santa Susana Pass near Blind Canyon, the base noise level for 2,000 TPD off-loading will be 85.3 dBA. With a distance and air attenuation of 49.9 dB and a barrier attenuation of 23 dB, the resultant L_{eq} noise level will be 12.4 dBA, too small to make any impact on the existing noise level.

The potential Blind Canyon Landfill site is shielded so that Sites 1, 2, and 4 will not be affected by the on-site activity of trucks off-loading and scraper activities. However, the landfill would be in direct line of sight of some of the proposed Indian Springs development (Site 3a). Although these will be nearly a mile away from any visible activities, some impacts may be experienced as the landfill comes to completion.

It is difficult to predict what the background level at the Indian Springs housing project would be. In order to try to model the existing noise level, measurements were taken at a similar built-out project in a nearby location at the end of Poema Drive. Assuming that the background levels in the Indian Springs area are similar, there could be as much as 1.8 dB L_{eq} impact for the 16,500-TPD scenario during the latter years of landfill development. This was calculated for the last top deck, worst case fill level and would only affect two proposed homes in the Indian Springs project on lots 47 and 50. All other homes in the project would be affected to a lesser degree. Even in this worst case, it is not considered a significant adverse impact due to the low absolute level of the intrusive noise levels. A lower level of impact could be achieved by placing earthen berms on the line of sight between the landfill operation and the proposed homes in question; however, there would be a short-term noise impact associated with the construction of these barriers.

Table 4.7-5 Noise Levels at Sensitive Sites Near the Blind Canyon Project Due to Landfill Unloading Operations

Site ^a	Base level, dBA ^b	Distance and air attenuation, dB ^c	Terrain attenuation, dB ^d	L _{eq} noise level, dBA ^e	Existing noise level, L _{eq} , dBA	Total
2,000 tons per day						
1	85.3	49.9	23	12.4	63.8	63.8
2	85.3	45.2	21.9	18.2	67.8	67.8
3a	85.3	43.0	7.0	35.3 ^f	46.6	46.9
4	85.3	50.6	23	11.7	59.4	59.4
16,500 tons per day						
1	93.7	49.9	23	20.8	63.8	63.8
2	93.7	45.2	21.9	26.6	67.8	67.8
3a	93.7	43.0	7.0	43.7 ^f	46.6	48.4
4	93.7	50.6	23	20.1	59.4	59.4

^aSee Figure 4.7-2 for location of sites and Table 4.7-4 for description of locations.

^bRefers to noise level at 50 feet from operations area.

^cRefers to noise reduction due to distance from source.

^dRefers to noise reduction due to existing topography.

^eRefers to noise levels at the sensitive site due to landfill contributions.

^fCalculation for noise levels on top deck of landfill at closest two proposed lots to the landfill site.

Source: Marshall Long Acoustics, December 1989.

Traffic. All noise predictions start with a mathematical model. The model used for this analysis is the FHWA Highway Traffic Noise Prediction Model⁸³. The model was calibrated from many surrounding ambient noise measurements. Parameters adjusted included heavy truck percentage and shielding due to existing topography. The model could then be used in predicting noise levels generated from landfill traffic on all the affected roads. Studies were performed on different road segments. Assuming a distance of 50 feet from the road segment under examination, a noise value was determined for each segment for each scenario.

For example, at Freeway 118 east of the Blind Canyon access road, there is an existing noise level of 78.4 dBA L_{dn} at 50 feet from the centerline. In 1993, due to increased traffic from general commercial expansion in the area, the noise level would probably be 78.8 dBA. If the minimum landfill scenario of 2,000 TPD were adopted, there would be a corresponding noise level of 79.0 dBA from both general commercial expansion in the area, as well as the new landfill traffic present.

All sensitive sites were examined for their proximity to any affected road segments. In the cases where a sensitive site was near one road segment, the noise impact from that segment was evaluated. In the cases where a sensitive site was near two or more road segments, the noise impact from all the applicable segments was evaluated. Table 4.7-6 shows the noise levels from traffic approaching the potential Blind Canyon Landfill site for all sensitive sites.

The majority of the traffic approaching the potential Blind Canyon Landfill could come along the Simi Valley freeway. Since this roadway already has in excess of 100,000 vehicles daily passing along it, 5,000 heavy trucks would not significantly impact a house near this arterial. This is illustrated in the case of Site 2 (Table 4.7-6), which is 250 feet from the freeway. The most impact the landfill would have is 1.4 dBA L_{eq} in the year 1993 for the 16,500 TPD fill scenario. This is just audible to the average person. The landfill approaches are far enough away so that no noticeable noise impacts could be heard by any of the sensitive sites due to the landfill traffic.

Table 4.7-7 shows the noise impacts from on-site activities and landfill traffic, combined into one figure for each sensitive site. This table shows the overall impact and the relative contributions of on-site activities and traffic. As can be seen, Site 3a (Indian Springs housing development) would be the most affected area due to unloading operations.

Table 4.7-6 Noise Levels Experienced at Sensitive Sites Adjacent to the Potential Blind Canyon Landfill due to Traffic

Site ^a	Sensitive site description	1989 ambient	L _{dn} (dBA)					
			1993			2013		
			Without ^b	2,000 TPD	16,500 TPD	Without	2,000	16,500 TPD
1	Lilac and Santa Susana	65.0	65.5	65.5	65.5	67.3	67.3	67.3
2	Mayan and Topanga Canyon	69.2	69.6	69.8	71.0	70.8	71.0	71.9
3a	Indian Springs Housing Estates	53.0	37.4	37.5	38.0	37.4	37.5	38.0
4	Hilltop above Santa Susana	60.5	60.8	61.1	62.2	62.1	62.2	63.2
Site ^a	Sensitive site description	1989 ambient	L _{eq} (dBA)					
			1993			2013		
			Without ^b	2,000 TPD	16,500 TPD	Without	2,000	16,500 TPD
1	Lilac and Santa Susana	63.8	64.3	64.3	64.3	66.1	66.1	66.1
2	Mayan and Topanga Canyon	67.8	68.2	68.4	69.6	69.4	69.6	70.5
3a	Indian Springs Housing Estates	46.6	31.0	31.4	33.4	31.0	31.4	33.4
4	Hilltop above Santa Susana	59.4	59.7	59.8	60.1	61.0	61.0	61.3

^aSee Figure 4-7.2 for location of sites.

^bWithout landfill traffic.

Source: Marshall Long Acoustics

Table 4.7-7 Combined Noise Impacts From On-Site Activity and Landfill Traffic on All Sensitive Sites Near the Potential Blind Canyon Landfill Site Under Two Waste Streams Scenarios

Site ^a	24-hour average L _{dn} /dBA											
	1993		2013		1993		2013		1993		2013	
	2,000 TPD ^b	16,500 TPD	2,000 TPD	16,500 TPD	2,000 TPD	16,500 TPD	2,000 TPD	16,500 TPD	2,000 TPD	16,500 TPD	2,000 TPD	16,500 TPD
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0.2	1.4	0.2	1.1	0.2	1.4	0.2	1.1
3a ^c	0	0.2	0	0.2	0	0	0	0	0	0.2	1.1	0.2
3b ^d	0	0	0	0	0.1	0.6	0.1	0.6	0.3	1.4	0.1	1.1
4	0	0	0	0	0.3	1.4	0.1	1.1	0.3	1.4	0.1	1.1

L _{eq} /(dBA)												
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0.2	1.4	0.2	1.1	0.2	1.4	0.2	1.1
3a ^c	0.3	1.8	0.3	1.8	-	-	0.3	1.8	0.3	1.8	0.3	1.8
3b ^d	-	-	-	-	0.4	2.4	0.4	2.4	0.4	2.4	0.4	2.4
4	0	0	0	0	0.1	0.4	0	0.3	0.1	0.4	0	0.3

^aSee Figure 4.7-2 for location of sites.

^bTons per day.

^cClosest to landfill.

^dClosest to access road.

Source: Marshall Long Acoustics, December 1989

Landfill Gas Flare Station. Landfill gases are collected through perforated pipes laid down as the landfill is developed. Landfill generated gases are collected using blowers to withdraw the gas and a flare to burn off the excess gas. Sound level measurements have been made of the noise generated by such blowers at an existing flaring station. The result of the measurements for a typical blower at a distance of about 50 feet was 68 dBA.

The individual blowers at the potential Blind Canyon Landfill would be located at flare stations as shown on Figure 4.6-2. Based on these locations, noise levels can be calculated at the nearest residential location (Site 3a, Figure 4-6.2) where the existing ambient level is 46.6 dBA. The results indicate that existing ambient levels would not change as a result of the flare stations associated with each waste stream scenario. Landfill blowers are a relatively insignificant source of noise and would not cause any significant impact on the surrounding environment.

Mitigation Measures

The only sensitive sites that would experience any significant impacts are those houses in the Indian Springs development site which would be in direct line of sight of the landfill activities. This impact would only be the case during latter stages of landfill development. The mitigation of these impacts could be achieved using earthen berms placed in the line of site between the landfill operations and the sensitive houses.

Berms which are constructed so as to block the line of sight between the source and the receiver can achieve a 5 dB reduction in source generated noise levels. Above this line of sight, berm effectiveness increases with height and can be roughly estimated by decreasing the sound level by an additional dB per foot of barrier.

Impacts of Mitigation Measures

The use of heavy equipment for construction of mitigation berms would result in short-term increases in the noise level. Mitigation berms on the edge of the landfill would be constructed by scrapers, which transport and unload the soil, and a crawler tractor, which compacts and shapes the slopes of the berm. A water truck would also be required for dust control, as well as to assist compaction of the soil. Berms would be constructed at appropriate locations for each lift of the landfill. Construction would take place over a relatively brief period of time. A 10-foot berm 500 feet in length could be constructed over a 3- to 4-day period. The temporary

increases in noise level during the portion of the day devoted to berm building as a function of distance from the berm would be approximately 45 dBA at 4,000 feet.

Unavoidable Impacts

None. Earthen berms would be placed in the line of site between the landfill operations and the sensitive houses to mitigate potential noise impacts to insignificance.

4.7.5 Towsley Canyon

The potential Towsley Canyon Landfill site is located north of the intersection of the Antelope Valley Freeway (State Highway 14) and the Golden State Freeway (Interstate 5). All of the project boundary lies within unincorporated Los Angeles County.

Setting

In order to assess potential noise impacts from the Towsley Canyon Landfill project, information is needed on existing sensitive land uses in the area as well as existing ambient noise levels. To obtain this information, data presented in Section 4.1, Land Use, were reviewed, and appropriate field checks were conducted to identify sensitive land uses. A monitoring program was developed to document ambient noise levels in those areas.

The review of the land use information indicated that six sites would accurately represent the impacts from both on-site landfill activity and traffic accessing the potential Towsley Canyon Landfill site. Figure 4.7-3 shows the location of these sites. Table 4.7-8 presents the measured ambient noise levels. As can be seen, Interstate 5 is the major contributor to ambient noise levels at most of the sites.

Impacts

There are four major sources of potential adverse noise impacts with the Towsley Canyon Landfill site. These include landfill on-site activities (disposal operations and earth excavation), traffic, the landfill gas flare station, and construction activities. Construction activities are common to all landfills and are discussed in Section 4.2.3.

Landfill On-Site Activities. Calculations have been carried out at all of the sensitive sites for the potential Towsley Canyon Landfill site and are presented in Table 4.7-9. Table 4.7-9 shows the effect of on-site landfill activity on noise levels at each of the sensitive sites under



Figure 4.7-3 Ambient Noise Level Monitoring Locations Near the Potential Towsley Canyon Landfill Site

**Table 4.7-8 Ambient Noise Levels in the Vicinity of the
Towsley Canyon Landfill Project**

Site ^a	Location	Existing noise levels (dBA) ^b			Principal source of ambient noise
		Range	L _{eq}	L _{dn}	
1	Business on northeast corner of on-ramp and Old Road	62-82	70.2	71.5	Interstate 5
2	Old Road	52-64	58.1	58.4	Old Road and Interstate 5
3	Towsley Canyon Park	40-58	46.7	49.7	Interstate 5
4	Chicory Court (Sunset Pointe)	46-54	49.5	50.6	Interstate 5
5	California Conservation Corps	36-56	35.9	42.4	General background
6	Valencia Oaks Ranch	38-60	46.2	47.5	General background

^aSee Figure 4.7-3 for location of sites.

^bMeasurements were taken using a B&K 2230 sound level meter for about 20 minutes at each location.

Source: Marshall Long Acoustics, August 1989, March 1990.

Table 4.7-9 Noise Levels at Sensitive Sites Near Towsley Canyon
Due to Landfill Unloading Operations

Site ^a	Base level, dBA ^b	Distance and air attenuation, dB ^c	Terrain attenuation, dB ^d	L _{eq} noise level, dBA ^e	Existing noise level, L _{eq} , dBA	Total noise level, L _{eq} , dBA
2,000 tons per day						
1	85.3	48.1	23.0	14.2	70.2	70.2
2	85.3	44.7	21.2	19.4	58.1	58.1
3	85.3	47.1	23.0	15.2	69.8	69.8
4	85.3	47.1	21.5	16.7	49.5	49.5
5	85.3	50.4	23.0	11.9	35.9	35.9
6	85.3	46.5	23.0	15.8	46.2	46.2
16,500 tons per day						
1	93.7	49.1	23.0	21.6	70.2	70.2
2	93.7	45.6	21.2	26.9	58.1	58.1
3	93.7	48.1	23.0	22.6	69.8	69.8
4	93.7	48.1	21.5	24.1	49.5	49.5
5	93.7	51.4	23.0	19.3	35.9	36.0
6	93.7	46.5	23.0	24.2	46.2	46.2

^aSee Figure 4.7-3 for location of sites.

^bRefers to noise level of 50 feet from operations area.

^cRefers to noise reduction due to distance from source.

^dRefers to noise reduction due to existing topography. (23dB is a theoretical maximum. Actual values of attenuation may be greater.)

^eRefers to noise levels at the sensitive sites due to landfill contributions.

Source: Marshall Long Acoustics, April 1990.

different waste stream scenarios. Columns in the table show the various attenuation mechanisms affecting the landfill noise traveling to the sensitive sites. Noise traveling over large distances is affected by phenomena such as air absorption, barrier attenuation from natural topography, and attenuation due to geometric spreading. All of these would reduce the noise levels actually heard at each sensitive site.

For example, in the case of Towsley Canyon Park, which is Site 3, the base level under the 2,000 TPD plan due to unloading operations would be 85.3 dBA at 50 feet. With distance and air attenuation of 47.1 dB and a terrain barrier attenuation of 23 dB, the resulting L_{eq} noise level would be 15.2 dBA, too small to make any impact on the existing noise level. As indicated by the table, all sensitive sites in the vicinity of the potential Towsley Canyon Landfill site are shielded by natural topography such that none would be significantly impacted by landfill activities.

Traffic. As in the Blind Canyon analysis, the mathematical model used for noise predictions was FHWA Highway Traffic Noise Prediction Model.⁸³ The model was calibrated from many surrounding ambient noise measurements. Parameters to be adjusted included heavy truck percentage and shielding due to existing topography. The model could then be put to use in predicting noise levels generated from landfill traffic on all the affected roads. Studies were performed on different road segments. Assuming a distance of 50 feet from the road segment under examination, a noise value was determined for each segment for each scenario.

For example, at Highway 5 north of Calgrove, there is an existing noise level of 78.3 dBA L_{dn} at 50 feet from the centerline. In 1993, due to increased traffic from general commercial expansion in the area, the noise level will be 78.8 dBA. With the minimum landfill scenario of 2,000 TPD, there would be a corresponding noise level of 78.9 dBA from both general commercial expansion in the area, as well as the new landfill traffic present.

All sensitive sites were examined for their proximity to any affected road segments. In the cases where a sensitive site was near one road segment, the noise impact from that segment was evaluated. In the cases where a sensitive site was near two or more road segments, the noise impact from all the applicable segments was evaluated. Table 4.7-10 shows the noise levels from traffic approaching the potential Towsley Canyon Landfill.

Table 4.7-10 Noise Levels Experienced at Sensitive Sites Adjacent to the Potential Towsley Canyon Landfill due to Traffic

Site ^a	Sensitive site description	Ambient 1989	L _{dn} (dBA)					
			1993			2013		
			Without ^b	2,000 TPD	16,500 TPD	Without	2,000 TPD	16,500 TPD
1	Old Road underpass	71.5	72.4	72.5	73.3	74.3	74.4	74.9
2	Old Road	58.4	58.8	59.0	59.6	60.6	60.7	61.4
3	Towsley Canyon Park	47.9	48.3	49.1	52.4	50.1	50.6	53.2
4	Chicory Court (Sunset Pointe)	50.6	51.1	51.2	51.8	52.9	53.0	53.4
5	California Conservation	42.4	42.4	42.4	42.4	42.4	42.4	42.4
6	Valencia Oaks Ranch	47.5	48.0	48.1	48.7	49.8	49.9	50.3
			L _{eq} (dBA)					
1	Old Road underpass	70.2	71.1	71.3	72.5	73.0	73.2	74.0
2	Old Road	58.1	58.5	58.7	60.3	60.3	60.4	61.1
3	Towsley Canyon Park	46.7	47.1	49.2	54.8	48.9	50.4	55.2
4	Chicory Court (Sunset Pointe)	49.5	50.0	50.1	50.7	51.8	51.9	52.3
5	California Conservation	35.9	35.9	35.9	35.9	35.9	35.9	35.9
6	Valencia Oaks Ranch	46.2	46.7	46.8	47.5	48.5	48.6	49.0

^aSee Figure 4.7-3 for location of sites.

^bWithout landfill traffic.

Source: Marshall Long Acoustics, December 1989

As with the potential Blind Canyon Landfill, landfill traffic volumes are not large enough to significantly alter noise levels from the Golden State Freeway, so any traffic noise impacts would occur on the roads between the freeway off-ramps and the landfill. There are no significant impacts except for the houses close to the proposed landfill freeway off-ramps. In the case of The Old Road location, there would be an impact of 0.8 dB for the 16,500-TPD fill scenario in 1993 and a 0.8 dB impact for L_{dn} levels in 2013. The L_{eq} impacts are higher and amount to 1.8 dB for the 1993 maximum fill scenario and 0.7 in 2013.

For the Towsley Canyon Park, the access road would increase noise levels by as much as 10 dB for the worst case hour in the 16,500 TPD. For 1993 and 2013, the absolute L_{eq} levels are also above 55. Thus, this constitutes a significant adverse impact. In the 2,000-TPD scenario worst case hour, L_{eq} levels remain below 55, however, the changes are clearly noticeable being on the order of 2 to 3 dB. Mitigation measures are discussed in the mitigation measures section.

Table 4.7-11 shows the noise impacts from on-site activities and landfill traffic, combined into one figure for each sensitive site. This table shows the overall impact and the relative contributions of on-site activities and traffic. As can be seen, Sites 2 and 3 are the most affected areas.

Landfill Gas Flare Station. Landfill gases are collected through perforated pipes which are laid down as the landfill is developed. Landfill generated gases are collected using blowers to withdraw the gas and a flare to burn off the excess landfill gas. Sound level measurements have been made of the noise generated by such blowers at an existing flaring station. The results of the measurements for a typical blower at a distance of about 50 feet was 68 dBA.

The individual blowers at the potential Towsley Canyon Landfill site would be located at the flare station as shown on Figure 4.6-4. Based on these locations, noise levels can be calculated at the nearest sensitive location at Towsley Canyon Park where the existing ambient level is about 47 dBA. The results indicate that existing ambient levels would not change as a result of the flare station associated with each waste stream scenario. Landfill blowers are a relatively insignificant source of noise and would not cause any significant impact on the surrounding environment.

Table 4.7-11 Combined Noise Impacts from Traffic and On-Site Landfill Activity on all Sensitive Sites Near the Potential Towsley Canyon Landfill Site Under Two Waste Stream Scenarios

Site ^a	L _{dn} (dBA)			
	1993		2013	
	2,000 TPD ^b	16,500 TPD	2,000 TPD	16,500 TPD
1	0.1	0.9	0.1	0.6
2	0.2	0.8	0.1	0.8
3	0.8	4.1	0.4	3.1
4	0.1	0.7	0.1	0.5
5	0.0	0.0	0.0	0.0
6	0.1	0.7	0.1	0.5
	L _{eq} (dBA)			
1	0.2	1.4	0.2	1.0
2	0.2	1.8	0.1	0.7
3	2.1	7.7	1.5	6.3
4	0.1	0.7	0.1	0.5
5	0.0	0.0	0.0	0.0
6	0.1	0.7	0.1	0.5

^aSee Figure 4.7-2 for location of sites.

^bTPD = tons per day.

Source: Marshall Long Acoustics, April 1990

Mitigation Measures

The main significant impacts would be to access road traffic in the vicinity of the Calgrove off-ramp and adjacent to Towsley Canyon Park. Little could be done practically to reduce noise adjacent to off-ramps. While barriers could be built, overall impact due to the freeway, which is elevated at this location, plus the truck traffic would be difficult to mitigate.

In the case of Towsley Canyon Park, the calculations were based on preliminary access road elevations. It may be possible to move the access road somewhat further away from the park and to construct berms between the road and the park to reduce access road generated noise.

A 10-foot-high barrier immediately adjacent to the access road would provide a reduction of 9 dBA for the noise generated from the refuse vehicles. This would reduce the overall noise level to below 55 and would also reduce the change in noise level to about 2.8 dBA for the 16,500-TPD fill scenario.

Unavoidable Impacts

None.

4.7.6 Mission-Rustic-Sullivan Canyons

The potential Mission-Rustic-Sullivan Canyons Landfill complex site is located west of Highway 405, just south of the communities along Mulholland Drive. All of the project boundaries lie within the city limits of Los Angeles. As indicated in Chapter 3, the landfill complex would be operated such that Mission Canyon would be operated for the first 12-year period followed by operation of the Rustic-Sullivan Canyons Landfill site. Accordingly, Mission Canyon is discussed first in this section followed by Rustic-Sullivan Canyons.

4.7.6.A. Mission Canyon

The Mission Canyon Landfill was evaluated in a 1980 EIR prepared by the Sanitation Districts.⁴ The recommended development plan called for a maximum of 25 million tons of refuse over the estimated 12-year life of the project.

Setting

The August 1979 noise report prepared by Marshall Long Acoustics and contained in the 1980 EIR for the Mission Canyon Landfill was the source of information for this analysis.⁴ The

Mission Canyon EIR identified five sites in close proximity to the Mission Canyon site and likely to be strongly affected by landfill noise. Figure 4.7-4 shows the location of these sites. Table 4.7-12 presents the measured ambient levels. As can be seen, the daytime L_{eq} ambient levels are in the upper 40's to mid-50's, ranging from 48 to 54 dBA.

Impacts

There are five major sources of potential adverse noise impacts with the Mission Canyon Landfill. These include landfill on-site activity (disposal operations and earth excavation), traffic, the landfill gas flare stations, and construction activities. The mitigation berms are discussed separately in this section because of their close proximity to residential development.

The noise impact of the project was determined by calculating the average noise levels due to various operations. The levels were compared to the lowest daytime limit in the City of Los Angeles noise ordinance (55 dBA) to determine impact. Since decision makers may wish to know the frequency of occurrence of noise levels below 55 dBA, calculations have been shown down to 50 dBA for the groups of homes shown on Figure 4.7-4. For purposes of clarification and flexibility, the Mission Canyon Plan was subdivided into five areas. These in turn were divided into subareas for describing noise impact.

Large earthen berms are proposed for construction along the edge of the landfill as part of the project. The location and height of these berms are shown on Figure 4.7-4. The presence of the berms has been assumed in all calculations, rather than including these data in a separate mitigation section. This was done primarily for convenience of presentation.

Landfill On-Site Activity. In order to quantify the noise from vehicles and equipment associated with the potential Mission Canyon Landfill, the model developed by Marshall Long Acoustics for the Mission Canyon EIR prepared by the Sanitation Districts in 1980 was used along with additional measurements made on operations at the Puente Hills Landfill.^{81,82}

Based on the model, the worst-case noise contributors are the crawler tractors and heavy trucks off-loading their loads located on the working landfill zone on a day-to-day basis. Since the model was developed in 1980, steps were taken to assure that it was still valid for equipment currently in use. Measurements were repeated at the Puente Hills Landfill in March of 1990 in order to confirm the accuracy of the previous measurement. The accuracy of the prediction methodology was checked and found to be within 0.5 dB of the measured value.

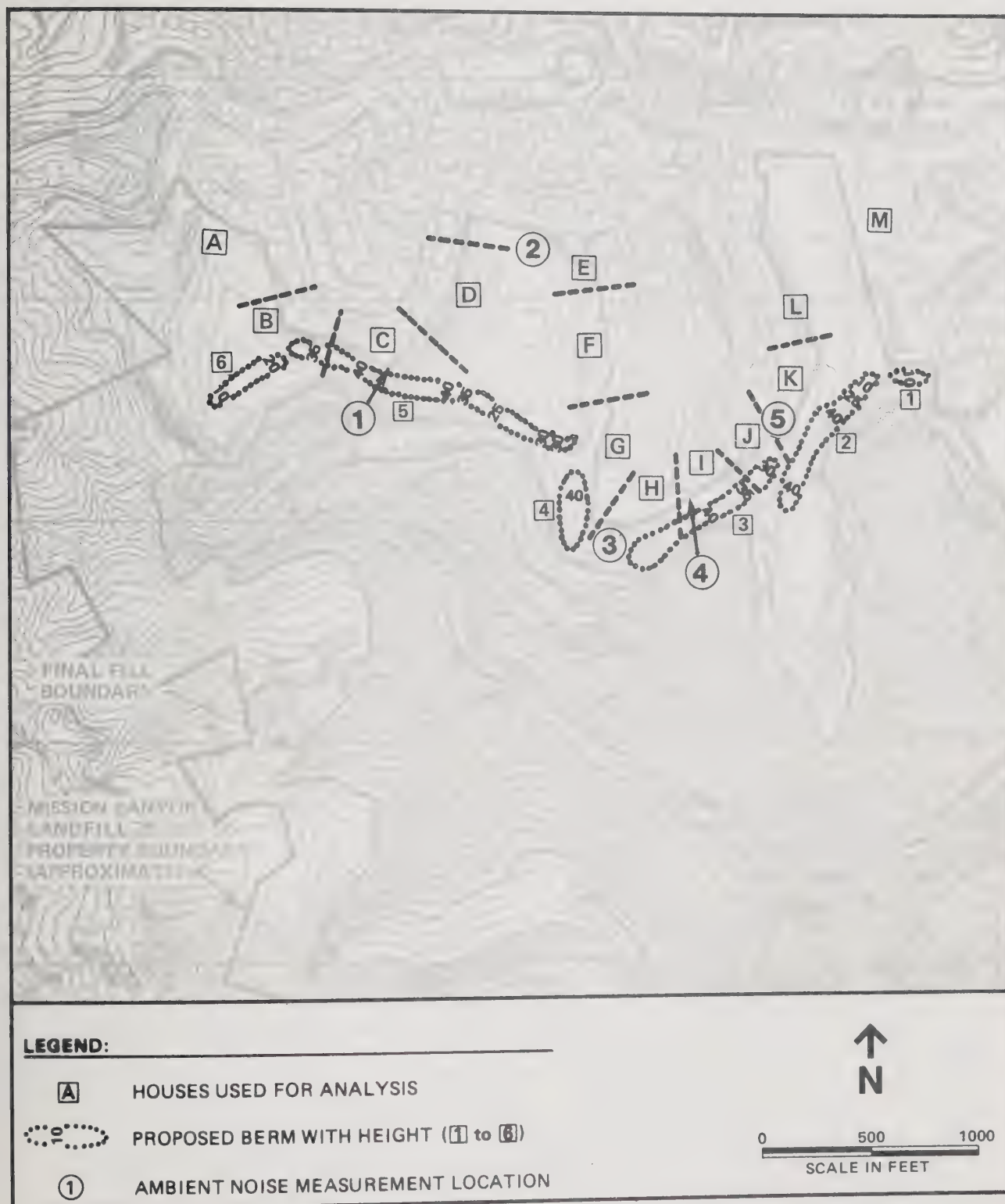


Figure 4.7-4 Sensitive Residential Areas, Location of Mitigation Berms and Ambient Noise Measurement Locations Near the Potential Mission Canyon Landfill Site

Table 4.7-12 Ambient Noise Levels in the Vicinity
Of the Mission Canyon Landfill Site

Site ^a	Location ^b	Range	Ambient noise levels, dBA ^c		
			L _{eq}	L _{dn}	Principal source of ambient
1	Park Lane Circle	39-74	53	54.1	Traffic on 405
2	Sloan Drive	39-83	51	57.5	Traffic on 405
3	Elvido Drive	39-68	48	53.1	Traffic on 405
4	Corda Drive Number 1	37-76	51	51.0	Traffic on 405
5	Corda Drive Number 2	44-80	54	53.6	Traffic on 405

^aSee Figure 4.7-4 for location of monitoring sites.

^bThe locations were at or near the fence of the nearest residence where possible. Locations were chosen to cover the northern perimeter of each site. Most homes in the area had both air conditioners and swimming pool pumps. Considerable care was taken to avoid locations where the ambient was dominated by these sources.

^cMeasurements were taken using a GenRad 1945 Community Noise Analyzer for 24 hours at each location. The 24-hour measurement period was divided into 3 hours periods beginning of 8:00 a.m. These data are from the 8:00 a.m. to 4:00 p.m. period.

Source: Marshall Long Acoustics, 1979.

The noise levels due to aggregate unloading operations have been calculated for the worst-case home in each house group. The calculations were broken down by area, subarea, and elevation of the landfill and are summarized in Table 4.7-13. The noise levels shown are the average noise levels expected during normal unloading operations. The results show that the major impact would occur during the upper levels of the final development plan. The most severely impacted homes are the Groups G, H, I, and J where levels would exceed 55 dBA. These homes, due to the topography of the site, are located where barriers are least effective. All calculations include consideration of topographical shielding due to berms at the heights shown on Figure 4.7-4.

The number of days the noise level occurs in any one noise level category may not be consecutive and would depend on the way the canyon is filled and the effectiveness of the terrain shielding and other mitigation measures. Based on the analysis conducted, 23 homes would experience noise levels above 55 dBA for periods of a few days to as much as 215 days during the entire project life. This is a significant adverse impact.

The August 1979 noise report prepared by Marshall Long Acoustics and contained in the 1980 EIR for the Mission Canyon Landfill evaluated other sources of noise associated with on-site landfill activity. These include noise from scraper operations during cutting and covering activities. The analysis concluded scraper operations would not be a significant source of noise.

Traffic. Traffic noise in the vicinity of the site is caused principally by traffic along the San Diego Freeway. In areas where a receiver is approximately equidistant from both the freeway and Sepulveda Boulevard, the additional noise contribution from Sepulveda is around 0.5 dB even with all of the refuse vehicles on Sepulveda. This condition is typical of the Mountain Gate development as well as Casiano Bel Air Estates area. Homes in both these developments are approximately equidistant from the roadways. The noise level at a typical home would depend on the degree of shielding. However, for equal shielding of both roadways, the presence of Sepulveda Boulevard traffic is virtually inaudible compared to the San Diego Freeway traffic when both roadways are moving freely. When the San Diego Freeway is halted or appreciably slowed, then Sepulveda traffic can become a noticeable source. The overall noise levels under these conditions are significantly lower than for the free flowing condition on both roadways. As a result of the predominance of San Diego Freeway traffic, the additional landfill traffic will have little to no noise impact on local residential areas.

Table 4.7-13 Summary of Noise Impacts at the
Potential Mission Canyon Landfill
Due to the Unloading Operations

House group ^a	Percent of time above significance criteria of 55 dBA ^b
A	3.4
B	12.1
C	14.4
D	13.4
E	0
F	9.0
G	8.0
H	12.9
I	16.4
J	13.7
K	11.4
L	0
M ^c	0

^aSee Figure 4.7-6 for location of house groups.

^bResults reflect consideration of topographic shielding due to berms.

^cMirman and Westland Schools.

Note: 25-million-ton fill design requires 4,300 days to complete at 6,000 TPD.

Source: Marshall Long Acoustics

With the Rimerton Road entrance, the situation is not greatly different. Homes in the Casiano development with an unshielded view of the Rimerton entrance also have a clear view of the freeway. Measurements of freeway generated traffic at the rear of homes in the Casiano development yielded L_{eq} levels of approximately 51 dBA due to the freeway. Calculations of truck noise along the Rimerton Road entrance resulted in predicted L_{eq} levels of 52 dBA due to this source assuming half the length of the roadway would be visible at any one point. This assumption was confirmed by field observations from the Casiano development. The combined noise level at the worst case Casiano homes due to both the freeway and the Rimerton entrance traffic could be as high as 55 dBA.

Landfill Gas Flare Station. Landfill gases are collected through perforated pipes which are laid down as the landfill is developed. Landfill generated gases are collected using blowers to withdraw the gas and a flare to burn off the excess gas. Sound level measurements have been made of the noise generated by such blowers at an existing flaring station. The results of the measurements for a typical blower at a distance of about 50 feet was 68 dBA.

The individual blowers at the potential Mission Canyon Landfill site would be located at the flare station as shown on Figure 4.6-6. Based on these locations, noise levels can be calculated at the nearest residential location at House Group H or I. The results for Mission Canyon are:

<u>Waste stream scenario, TPD^a</u>	<u>Sound level at nearest sensitive location, dBA^b</u>
6,000 TPD	18.1

^aSee Figure 4.6-6 for location of flare station.

^bHouse Group H or I.

Landfill blowers are a relatively insignificant source of noise and would not cause any noticeable impact on the surrounding environment.

Construction of Sound Mitigating Berms. Table 4.7-14 summarizes noise levels that each of the house groups would be exposed to while the six landscaped berms are constructed. The six berms shown on Figure 4.7-4 are numbered from east to west with the first berm located in Canyon 1 and number six in Canyon 2. The noise levels shown are the average levels that would occur during the entire time of construction and the average maximum noise values over short periods, 1 to 2 days.

Table 4.7-14 Projected Noise Levels (dBA) at the Various House Groups During Berm Construction at the Mission Canyon Landfill Site

Time to construct	Berm (1)		Berm (2)		Berm (3)		Berm (4)		Berm (5)		Berm (6)	
	2-3 days		15-20 days		20-25 days		5-8 days		20-25 days		4-6 days	
House group ^a	Average ^c	Average ^c maximum	Average	Average maximum	Average	Average maximum	Average	Average maximum	Average	Average maximum	Average	Average maximum
A	- ^d	-	-	-	-	-	-	-	69	70	70	74
B	-	-	-	-	-	-	59	62	74	84	71	77
C	-	-	-	-	-	-	62	64	80	84	69	73
D	-	-	-	-	-	-	62	64	71	73	-	-
E	-	-	-	-	-	-	61	63	65	67	-	-
F	-	-	-	-	-	-	70	74	68	73	55	57
G	-	-	-	-	49	52	79	81	70	76	54	57
H	62	62	66	68	77	79	53	53	67	72	54	57
I	64	64	72	75	82	84	-	-	-	-	-	-
J	66	66	74	76	82	84	-	-	-	-	-	-
K	69	69	74	76	72	77	-	-	-	-	-	-
L	69	70	71	73	-	-	-	-	-	-	-	-
M	65	65	63	63	57	61	-	-	-	-	-	-

^aSee Figure 4.7-4 for location of berms and house groups.

^bTime indicated is for dirt moving and placement.

^cAverage noise levels (dBA) would be for the construction period; average maximum noise (dBA) levels would be for short duration.

^dHouse group not affected by construction of this berm.

Note: The construction of berms may be performed in a sequence that allows shielding of subsequent berm construction by berms already built. For example, berm 5 may somewhat shield the construction of berm 4.

Source: Marshall Long Acoustics.

The maximum noise levels would generally occur when the portion of the berm closest to the house group is constructed. The construction noise levels were based upon the use of bottom-dump trucks for dirt hauling, two crawler tractors, two water trucks, and one motor grader operating on the berms. Landscaping and irrigation construction would not be a high noise producing activity so this was not included in the time for berm construction. Since the noise levels for the berm construction are significantly higher, in many cases above the noise levels from the actual filling operation, this would be considered a temporary adverse impact. The berms would be removed at the end of their usefulness if so desired by the nearby residents. Noise impacts similar to the construction levels would be expected on removal for probably shorter time periods. To mitigate the noise impacts associated with berm construction and removal, the Sanitation Districts would offer to provide temporary partitions on residential properties affected by the berm construction. Temporary partitions near the berms would be constructed where feasible to reduce the indicated noise values to lower levels.

Mitigation Measures

The principal mitigation measures proposed for the project have been included in the analysis. These are:

1. The use of the quietest heavy equipment available on the marketplace.
2. The construction of earthen berms in the locations shown on Figure 4.7-4.

In addition to these measures, other steps would be taken including:

1. Perform regular maintenance of equipment to ensure no increase in levels.
2. Construct the approach roadways within the canyon so that there are berms on the sides which are exposed to homes. This is not necessary where there is significant natural shielding, but would be very helpful as the canyon is filled.
3. Make the employees at the landfill aware of noise problems so that they would be sensitive in their vehicle operation procedures.

Unavoidable Impacts

The noise created by the construction of the landscaped berms would be a temporary avoidable adverse impact due to the construction equipment noise and proximity of the berms to the surrounding properties.

During the proposed 12 years of landfill activity, the mitigation measures described above would reduce project-related noise levels to the minimum feasible. This does not mean that the landfill operation would not be heard by the residents at various times during the project period. For some residents, exposure to higher noise levels would occur. For these houses, fencing could be constructed on private property during the periods of higher noise levels if so desired by the residents to attenuate this noise. In areas where the operation results in the higher noise levels at certain homes, there would be attempts when at all possible to split the operation, sending the noisier collection equipment to an area better shielded from homes. Saturday operations would be moved to the most shielded areas available in the site and would be restricted to small (primarily homeowner) loads of refuse. Exposure to noise levels to be above the criteria levels is considered to be a long-term adverse impact.

4.7.6.B. Rustic-Sullivan Canyons

The potential Rustic-Sullivan Canyons Landfill site is located west of the Mission Canyon Landfill site. All of the project boundaries lie within the city limits of Los Angeles.

Setting

In order to assess potential noise impacts from the Rustic-Sullivan Canyons Landfill site, information was collected on existing sensitive land uses in the area as well as existing ambient noise levels. To obtain this information, data presented in Section 4.1, Land Use, were reviewed, and appropriate field checks were conducted to identify sensitive land uses. A monitoring program was developed to document ambient noise levels in these areas.

The Rustic-Sullivan Canyons Landfill site is more remote than the Mission Canyon site. Three sites were selected to accurately represent project impacts. Figure 4.7-5 shows the location of the sites, and Table 4.7-15 presents the measured ambient levels.

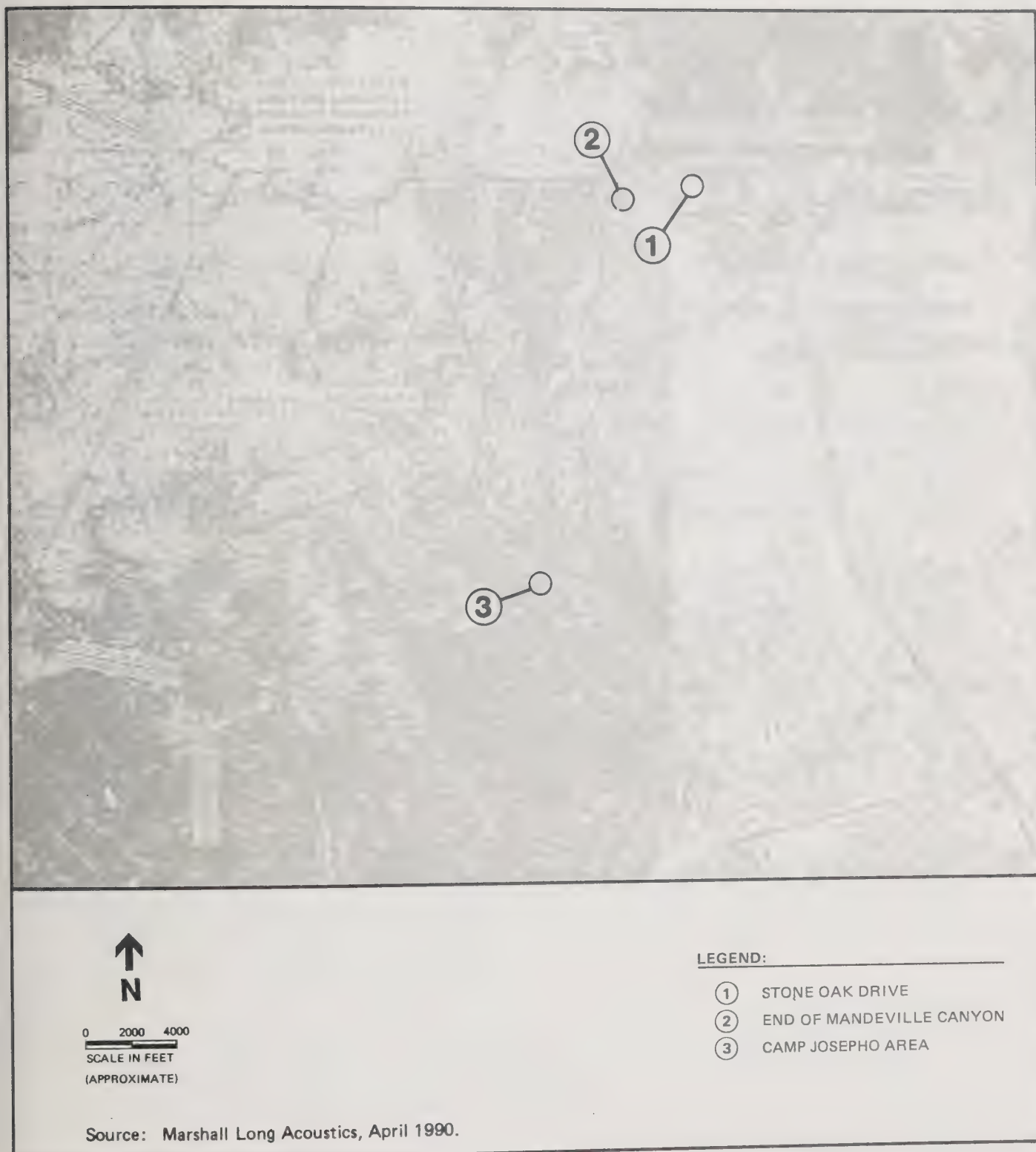


Figure 4.7-5 Ambient Noise Level Monitoring Locations Near the Potential Mission-Rustic-Sullivan Canyons Landfill Sites

Table 4.7-15 Ambient Noise Levels at Sensitive Locations Near
Rustic-Sullivan Canyons

Location ^a	Description	Measured ambient noise levels, dBA			Source
		Range	L _{eq}	L _{dn}	
1	Stone Oak Drive	38-44	40.6	42.7	General background
2	End of Mandeville Canyon	36-56	42.4	43.1	Aircraft overflights General background
3	Camp Josepho Area	44-56	42.4	44.7	General background

^aSee Figure 4.7-5 for location of ambient noise monitoring sites.

Source: Marshall Long Acoustics, April 1990.

Impacts

There are four major sources of potential adverse noise impacts with the Rustic-Sullivan Canyon Landfill complex. These include landfill on-site activities (disposal operations and earth excavation), traffic, the landfill gas flare stations, and construction activities. Construction activities are common to all landfills and are discussed in Section 4.2.3.

Landfill On-Site Activities. In order to quantify the noise from vehicles and equipment associated with the potential Rustic-Sullivan Canyons portion of the landfill, the model developed by Marshall Long Acoustics for the Mission Canyon 1980 EIR was used along with additional measurements made on operations at the Puente Hills Landfill.^{81,82}

The results of the calculations for unloading operations are shown in Table 4.7-16. In all cases, the areas are sufficiently remote and shielded by ridges so that the unloading operations make a negligible difference on the overall noise levels resulting in no significant noise impact.

Traffic. As with the previously discussed potential landfill sites, the model used here was FHWA Highway Traffic Noise Prediction Model.⁸³ The model was calibrated from many surrounding ambient noise measurements. Parameters to be adjusted included heavy truck percentage and shielding due to existing topography. The model could then be put to use in predicting noise levels generated from landfill traffic on all the affected roads. Studies were performed on different road segments. Assuming a distance of 50 feet from the road segment under examination, a noise value was determined for each segment for each scenario.

All sensitive sites were examined for their proximity to any affected road segments. In the cases where a sensitive site was near one road segment, the noise impact from that segment was evaluated. In the cases where a sensitive site was near two or more road segments, the noise impact from all the applicable segments was evaluated.

The results of the traffic-generated noise indicate that little impact will occur due to traffic along the landfill access road. Because of the high existing noise levels due to traffic-generated noise, the addition of noise due to landfill traffic is limited to under 1 dB.

The analysis of traffic-related noise impacts also addresses the impacts of the access road as it originates from Sepulveda Boulevard and extends to the Rustic-Sullivan Landfill

Table 4.7-16 Noise Levels at Sensitive Sites Near the Rustic-Sullivan Canyons Landfill Site due to Landfill Unloading Operations

Site ^a	Description	Base level dBA ^b	Distance and air attenuation, dB ^c	Terrain attenuation, dB ^d	L _{eq} noise level dBA ^c	Existing noise level L _{eq} , dBA	Total noise level L _{eq} , dBA
2,000 tons per day							
1	Stone Oak Drive	85.3	41.6	23.0	20.7	40.6	40.6
2	End of Mandeville Canyon	85.3	36.9	23.0	13.9	42.4	42.4
3	Camp Josepho Area	85.3	40.0	23.0	22.3	42.4	42.4
16,500 tons per day							
1	Stone Oak Drive	93.7	41.6	23.0	29.1	40.6	40.9
2	End of Mandeville Canyon	93.7	36.9	23.0	33.8	42.4	42.6
3	Camp Josepho Area	93.7	40.0	23.0	30.7	42.4	42.4

^aSee Figure 4.7-5 for location of sites.

^bRefers to noise level of 50 feet from operations area.

^cRefers to noise reduction due to distance from source.

^dRefers to noise reduction due to existing topography.

Source: Marshall Long Acoustics, December 1989.

site. The access road is located on the south edge of Mission Canyon hillside approximately 2,300 feet from the nearest home in the Bel Air area. Even if it were totally exposed to the homes without any barriers shielding it, it would only result in a 45 dBA noise level which is below the existing ambient at these locations. In point of fact, it will be shielded by the hillside at least partially as it winds into the Rustic-Sullivan Canyons area.

The point of closest approach to homes along Mulholland is for sensitive site number 1 (Figure 4.7-5). For this site, however, the roadway would be shielded by the crest of the hill and would result in levels that are approximately 32 dB at that location.

As the roadway approaches the upper part of Mandeville Canyon, however, some of the road is exposed to the homes at the end of Mandeville Canyon. Here, careful calculations have been carried out based on section cuts for the proposed roadway for a typical house at the end of the canyon. The results are summarized below:

Waste stream scenario, TPD	Access road generated noise at Mandeville Canyon, dBA	
	L_{eq}	L_{dn}
2,000	51.8	48.0
16,500	61.4	57.6

Source: Marshall Long Acoustics, April 1990.

For the 2,000-TPD scenario, peak hour L_{eq} levels of approximately 52 dBA can be expected, and in the 16,500-TPD scenario, peak hour L_{eq} levels of about 61.0 dBA can be expected. Both of these levels exceed the existing ambient, which is in the low 40s in that location. In the case of the 16,500 TPD, the levels exceed the 55-decibel standard by about 6 dBA. Landfill traffic could, therefore, result in significant adverse noise impacts to homes in the Mandeville Canyon area. However, as discussed in the mitigation section below, barriers could be constructed in appropriate locations to reduce impacts to acceptable levels.

Landfill Gas Flare Station. Landfill gases are collected through perforated pipes laid down as the landfill is developed. Landfill generated gases are collected using blowers to withdraw the gas and a flare to burn off the excess gas. Sound level measurements have been made of the noise

generated by such blowers at an existing flaring station. The results of the measurements for a typical blower at a distance of about 50 feet was 68 dBA. The individual blowers at the potential Rustic-Sullivan Canyons Landfill site would be located at flare stations as shown on Figure 4.6-6. Based on these locations, noise levels can be calculated at the nearest residential location in Mandeville Canyon where the existing ambient level is 42.4 dBA. The results indicate that existing ambient levels would not change as a result of the flare stations associated with each waste stream scenario. Landfill blowers are a relatively insignificant source of noise and would not cause any significant impact on the surrounding environment.

Mitigation Measures

The impact analysis indicates landfill traffic using the access road would cause significant adverse noise impacts to homes in Mandeville Canyon. Sound barriers of 10 to 15 feet in height placed in appropriate locations would be required to reduce impacts to existing ambient levels. Smaller barriers (about 8 feet in height) would be sufficient to reduce noise levels generated in the 16,500-TPD scenario to the 55-dBA standard.

Unavoidable Impacts

None.

4.7.7 Cumulative Impact Assessment

Potential noise impacts associated with vehicular traffic were based on traffic projections that accounted for cumulative growth. Therefore, cumulative noise impacts have been examined and are shown in the appropriate tables in this section. No significant cumulative noise impacts are expected due to landfill operation.

4.8 AESTHETICS

Aesthetic issues are discussed in this section relative to waste diversion and the potential landfill sites. These issues involve visual changes and litter.

4.8.1 Waste Diversion

The handling of significant volumes of potentially recyclable materials by households, businesses, scavengers, collectors, processors, shippers, and end-users creates opportunities for developing unsightly conditions. Increased recycling serves to add value to material, making its casual discard (e.g., as litter) less likely. In similar fashion, attention to aesthetic considerations in recycling operations will improve public acceptance of specific sites as well as help raise public acceptance of the principle of recycling.

Impacts and Mitigation Measures

Impacts and mitigation measures associated with various aesthetic issues are discussed below. Because specific facility sitings are not included in this Program Environmental Impact Report (EIR), the discussion is necessarily general in nature.

Collection and Intermediate Handling. Source reduction, particularly of throwaway packaging, and strong markets for beverage containers, as provided by the California "bottle bill" (AB 2020), will reduce roadside litter and improve visual impacts throughout the community.

Improper or vandalized set-outs of recyclables at curbside (especially in those areas where garbage collection has been backyard service or where the recyclables are not uniformly containerized) can negatively impact the appearance of residential neighborhoods and commercial areas. These conditions can be mitigated by proper containerization and monitoring by both the waste generator and the collector.

Drop-off, buy-back recycling, and materials recovery facility locations also can be the source of unsightly litter if not properly maintained and materials received are not appropriately contained. Maintenance and containerization can be made a part of a conditional use permit. These mitigating efforts must be sustained and monitored for compliance since significant unsightly conditions can develop rapidly. Proper siting and design of these facilities would enhance compatibility with surrounding land uses.

Another source of aesthetic deterioration is the independent scavenger who may sort through public waste receptacles for recyclables and scatter unwanted material on the ground in the process. Enforcement of anti-scavenging ordinances and speedy cleanup are possible mitigation measures. On the positive side, these same scavengers will also remove recyclable roadside litter, thus enhancing the appearance of the area.

Unavoidable Impacts

None. Aesthetic impacts associated with waste diversion activities can be mitigated by proper containerization, monitoring, and cleanup.

4.8.2 Issues Common to All Landfills

Issues common to all landfills include the regulatory overview of litter control. Issues related to access, landfill development, and closure are addressed in later subsections.

Regulatory Overview

California Code of Regulations (CCR) Chapter 3, Division 7, of Title 14 deals with minimum standards for solid waste handling and disposal. These regulations are enforced by the California Integrated Waste Management Board (CIWMB) and the Local Enforcement Agency. Sections 17225.42, 17683, and 17711 of the code address litter.

In sum, Title 14 requires that litter not be allowed to migrate off site from a solid waste disposal site and that any litter and loose materials be routinely collected and disposed of properly. Title 14 also requires a designated Local Enforcement Agency to periodically monitor the effectiveness of the litter control program.

Title 14, Section 17679, Final Site Face, requires that for final finished slopes facing residential properties, roads, and/or other publicly frequented property, the slope of the final exterior surface must have a neat, finished appearance and must not be steeper than a horizontal:vertical ratio of 1-3/4:1.

Other regulations pertaining to litter include the California Penal Code, Section 3746, which prohibits littering or dumping on public or private highways, and the California Vehicle Code, Sections 23112a and 23115, which prohibit the depositing of trash or glass on highways and which require refuse-hauling vehicles to be covered to prevent spilling their loads.

Planning Framework

General plans of counties and cities contain goals and guidelines related to scenic resources which are used by these jurisdictions to evaluate projects and regulate development. Relevant county and city general plan goals and policies are discussed below. See Section 4.1, Land Use, Plans, and Policies for further discussion of land use planning policies that would affect landfill siting.

Litter

Each of the potential landfills would be located in large, undeveloped canyons which presently do not have significant sources of litter. Landfill operation would introduce potential sources of litter to the areas.

Impacts. Refuse collection and disposal in landfills create two possible sources of litter: (1) escape of litter from collection trucks and (2) escape of litter from the daily landfill activity prior to covering with soil. Modern refuse collection vehicles are designed to contain refuse until unloaded; however, occasional emission of litter may occur.

Transport of refuse to a landfill site could contribute litter to areas along the transport corridor and constitute a significant aesthetic impact. Access to each site would minimize travel on surface streets and, thereby, minimize litter release by refuse vehicles on streets surrounding each site. During periods of strong winds, control of litter at each landfill site would become more difficult, and escape of litter onto the front face slopes could occur. During these episodes, litter control measures in addition to early covering would be necessary.

Mitigation Measures. Solid waste delivered to each landfill site would be required to be covered to prevent the escape of litter on public streets and within the landfill property. All potentially litter producing loads would be required to be covered. As an incentive, customers bringing loads which have the potential to cause litter and arrive at the site uncovered would be required to pay a surcharge in addition to the normal disposal fee, which helps fund litter cleanup programs. Citations would also be issued to those companies or individuals who bring uncovered loads to the landfill. Repeated citations result in a loss of disposal privileges. In addition, employees would regularly police the entrance areas, interior roads, and nearby streets. These areas would also be regularly cleaned by a street sweeper.

Litter control in the landfill operating area would primarily be achieved via the daily cover of waste with 9 to 12 inches of suitable cover material. Earthen berms would be used when the operations are near the front faces of the fills. This would help to eliminate litter from reaching the slopes below the operation areas on windy days. Portable anti-litter fences would also be moved to appropriate positions near the working face to intercept wind-blown papers. In addition, efforts would be made on windy days to cover the refuse with soil at an earlier stage of the day's operational activities. Litter which escapes these two mitigation efforts would be collected by employees. If feasible, operations would be conducted in topographically shielded areas during high wind conditions.

Occasionally, indiscriminate dumping of solid waste can occur at landfill entrance areas, especially during non-operating hours. This would be mitigated by assigning the landfill off-hours guard to include the entrance area in the routine inspection rounds, by providing more widespread notice of the landfill operating hours, and by having site personnel clean up the litter as soon as possible.

Unavoidable Impacts. Extreme winds may cause escape of some litter despite the mitigation efforts described above. Litter which escapes from the site would be collected as soon as possible. Infrequent indiscriminate dumping of waste near the landfill entrance areas may occur; however, the waste would be cleaned up the following day.

Visual Access Control Measures

Visual access control measures would be taken to block views to refuse operations at all potential landfill sites. The potential new landfills would be constructed inside existing tributary canyons with the fill grades approximately 100 feet below the ridgelines at the head of the canyon. Ridgelines surrounding each potential landfill would be effective in shielding the disposal operations at each site from surrounding communities and roadways. To ensure visual obstruction of the operating areas, the potential sites would incorporate earthen berms (mounds) placed at the top of the fill and along the front face. The berms would shield the operation from visual access and also serve as a noise barrier. The berms would become part of the front face final cover once they are landscaped. In addition, contour grading of fill slopes and permanent excavation slopes would be conducted along with prompt vegetation for reduction of visual impacts.

4.8.3 Blind Canyon

Setting

The potential Blind Canyon Landfill site straddles the border between Ventura and Los Angeles Counties approximately 2 miles north of Highway 118. The site is about 1 mile east of the city limits of Simi Valley and 4 miles west of the developing edge of the Porter Ranch Area. Residential areas are located within approximately 1 mile of the project site to the south, southwest, and southeast. The most prominent visual features in Blind Canyon are the steep to very steep canyon slopes covered with dense chamise chaparral. Distinctive rocky ridges form the proposed project boundaries on all sides, particularly the western edge of the project site. These ridges are visible from inhabited areas in both Los Angeles and Ventura counties and from Highway 118, a Scenic Highway. The proposed access road would start at the Rocky Peak Road off-ramp from Highway 118 and run northwest into Blind Canyon. Part of the route would be across the northern face of the rock formation that forms the eastern edge of the Simi Valley.

Impacts

The evaluation of impacts focuses on the visual changes that would occur if a landfill is developed at Blind Canyon. Potential visual changes discussed below are differentiated according to access, landfill development, and closure.

Access. Construction and subsequent use of the access road would be visible only from a few locations surrounding the site. The road would be constructed to provide operational access to the landfill and would change the visual character of the area along its route. In order to determine the visual impacts of the landfill access road, photographs were taken from the vicinity of the Simi Valley City Hall looking east (Figure 4.8-1). Figure 4.8-2 shows the relative area from which the photograph was taken.

As indicated on Figure 4.8-2, the view from Simi Valley City Hall to the Blind Canyon area is quite distant, being about 4 miles away. From this location, only a small segment of the access road would be visible, and landfill activities would be screened by an intervening ridgeline. Visual impacts, therefore, would not be significant. An alternative access road alignment is also under consideration, which would not be visible from Simi Valley.

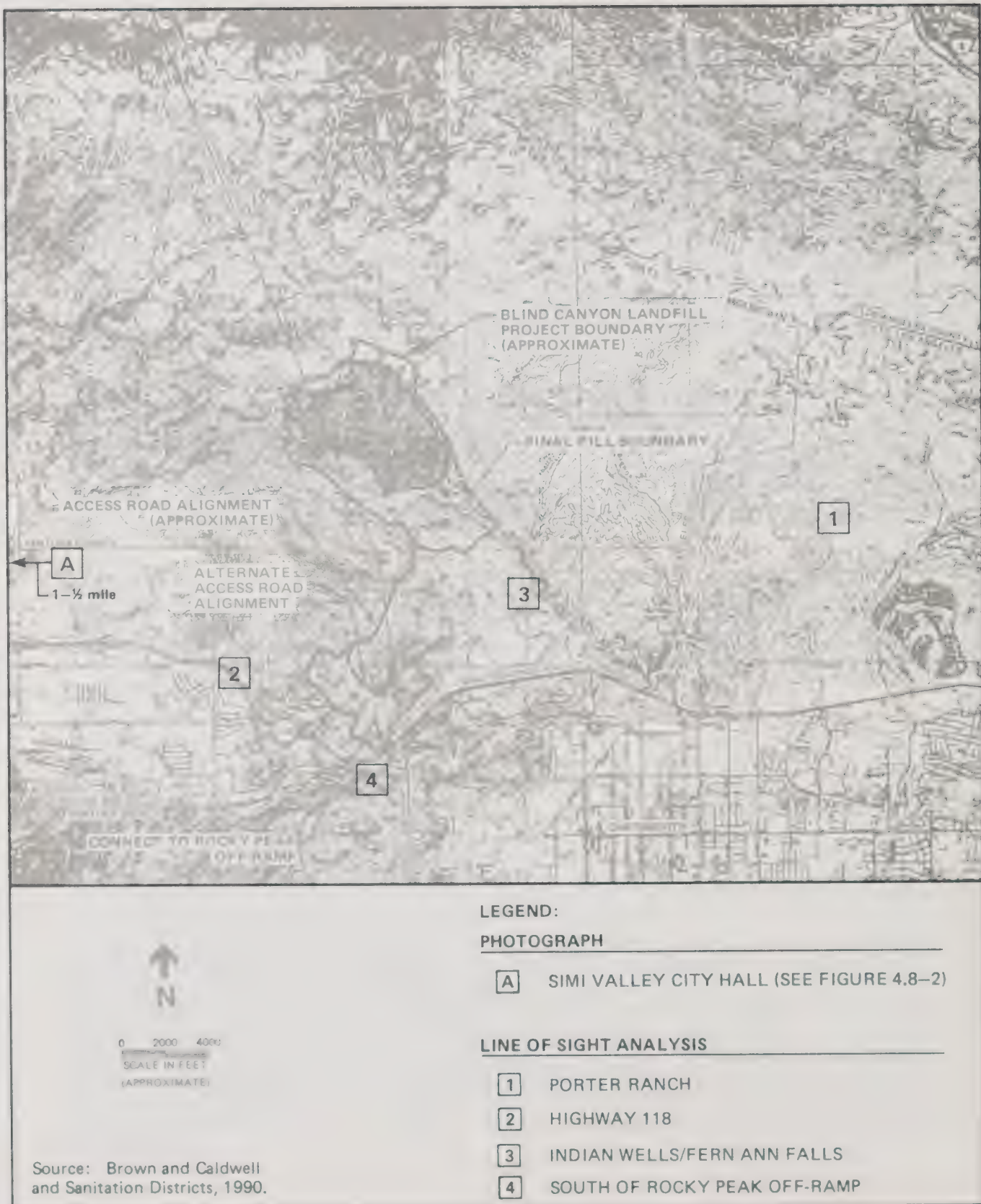
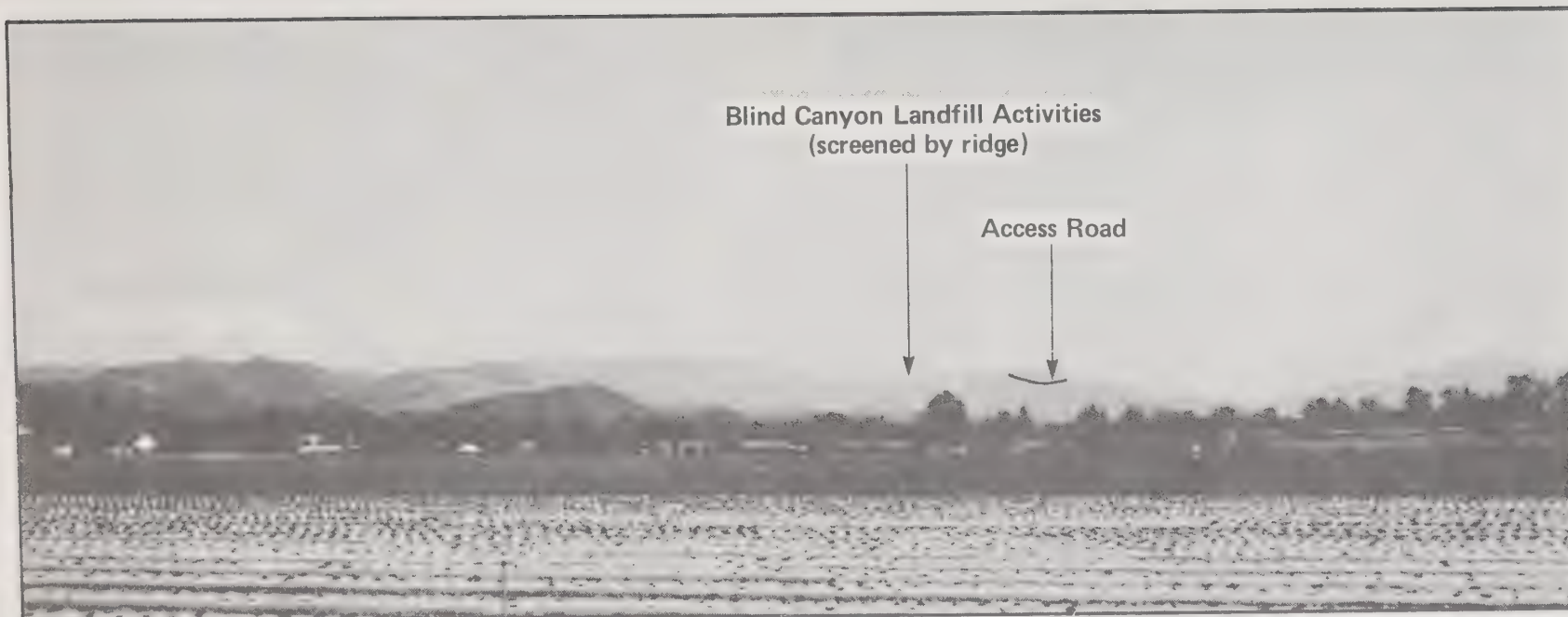


Figure 4.8--1 Location of Photo and Line of Sight Analyses at the Blind Canyon Landfill Site



Source: Brown and Caldwell and Sanitation Districts, 1990.

Figure 4.8—2 View of Blind Canyon Landfill from Simi Valley Near City Hall

Landfill Development. Features of landfill development that have aesthetic implications include the topographic changes inherent to filling in a canyon area, especially during latter years of landfill development, and the landfill gas flaring stations located near the project boundary at higher elevations.

The development of the landfill would significantly change the topography of Blind Canyon. Blind Canyon encompasses approximately 1,010 acres of which 530 would ultimately be filled. Approximately 52 percent of the site would be altered by excavation and grading. Ridgelines which surround Blind Canyon would provide shielding of the fill area from Highway 118 and existing residential areas. Line-of-sight analyses were performed from four locations surrounding Blind Canyon to determine if portions of the landfill area would be visible. Figure 4.8-1 shows the location of the line of sight analyses. The areas can be described as follows:

1. From the Porter Ranch development area looking west.
2. From Highway 118 in Ventura County looking east.
3. From the Indian Wells/Fern Ann Falls area looking northwest.
4. From a ridge off Lilac Lane south of the Rocky Peak off-ramp looking north.

These analyses were completed using the height of the final fill area to account for the most extreme condition. The analyses indicated that a small portion of the upper fill slopes would be visible from a narrow corridor of the Porter Ranch area about 4 miles away. Similarly, the upper fill slopes would likely be visible from lots in the Indian Springs housing project. Visual screening through the use of earthen berms along the front face of the landfill and planting of natural vegetation would mitigate this impact.

A landfill gas recovery and disposal system comprised of two gas flaring stations and associated blowers and condensate treatment units would be located within the project site as shown on Figure 4.6-2. One flare station would be located north of the fill area between the fill boundary and the site boundary at an elevation of approximately 2,600 feet, and the second flare station would be located south of the fill between the fill boundary and the site boundary at an elevation of approximately 2,200 feet. Both facilities would be surrounded by landscaped earthen berms or walls in order to shield views. The flares would initially be less than 20 feet in

height, but when sufficient landfill gas flows warrant, a new system of large capacity flares would be installed. The large capacity flares would be approximately 60 feet in height.

Closure. At the time of closure, all operational facilities would be removed except for environmental control systems such as the landfill gas recovery and flaring system. The fill area itself would be completely landscaped to blend with adjacent areas.

Mitigation Measures

Impacts caused by development of the landfill access road would be mitigated by shielding afforded by topographic features and planting of natural vegetation. The potential landfill would be developed inside an existing canyon with fill grades about 100 feet below adjacent ridgelines. The area of the final fill visible from the Porter Ranch area and the Indian Springs housing project after the fill area is at its maximum height (2,250 feet) would be screened by the use of earthen berms along the front face of the landfill and planting of natural vegetation.

Unavoidable Impacts

The existing topography of the canyon would be permanently changed.

4.8.4 Towsley Canyon

Setting

The potential Towsley Canyon Landfill site is located in the Santa Clarita Valley area of Los Angeles County. The City of Santa Clarita lies across Interstate 5 to the east. Residential and commercial development is taking place in the unincorporated area to the north of Towsley Canyon. Oil production and an underground natural gas storage facility are maintained to the south of the canyon, and microwave towers and transmission lines are present along the south and southwestern ridges at the project site boundaries. Undeveloped mountainous terrain lies to the west. The topography of Towsley Canyon consists of steep to extremely steep canyon slopes covered with varying amounts and types of vegetative cover.

Impacts

The evaluation of impacts focuses on the visual changes that would be caused by the implementation of a landfill at Towsley Canyon. Potential visual changes discussed below are differentiated according to access, landfill development, and closure.

Access. Construction and subsequent use of the access road would be visible only from a few locations surrounding the site. The road would be constructed to provide operational access to the landfill and would change the visual character of the area along its route. In general, the road would not be visible from the residential areas to the north or from the City of Santa Clarita to the east because it is below ridge-lines for most of its alignment. However, the off-ramp from the McBean Parkway and the trucks entering and leaving the road at this point would be clearly visible to other drivers on McBean Parkway, on the Old Road, and on Highway 5.

The unshielded view of the access road and truck traffic from the locations identified above would represent a significant adverse visual impact. Construction of a sound wall near Towsley Canyon Park for noise reduction (Section 4.7) and appropriate landscaping would mitigate this impact associated with landfill traffic.

Landfill Development. Features of landfill development that have aesthetic implications include the topographic changes inherent to the filling of a canyon area, especially during latter years of landfill development, and the landfill gas flaring station located at a higher elevation near the landfill project boundary. The development of the landfill would significantly change the character of Towsley Canyon. Towsley Canyon encompasses 2,500 acres of which 760 would be covered by the final fill. Approximately 30 percent of the site would be altered by grading. Small side ridges would be cut to provide the daily cover soil necessary for landfill operation and to provide a suitable base for the fill itself.

In order to determine areas where the fill itself would be visible, line of sight analyses were performed from locations surrounding Towsley Canyon to determine if portions of the landfill area and access route would be visible from these locations.

Figure 4.8-3 shows the areas from which photographs were taken that have potential visual access. The areas can be described as follows:

1. From Thornwood Drive in Santa Clarita, looking west (Figure 4.8-4).
2. From the south end of Chicory Court cul-de-sac in the Sunset Pointe subdivision, looking south (Figure 4.8-5).

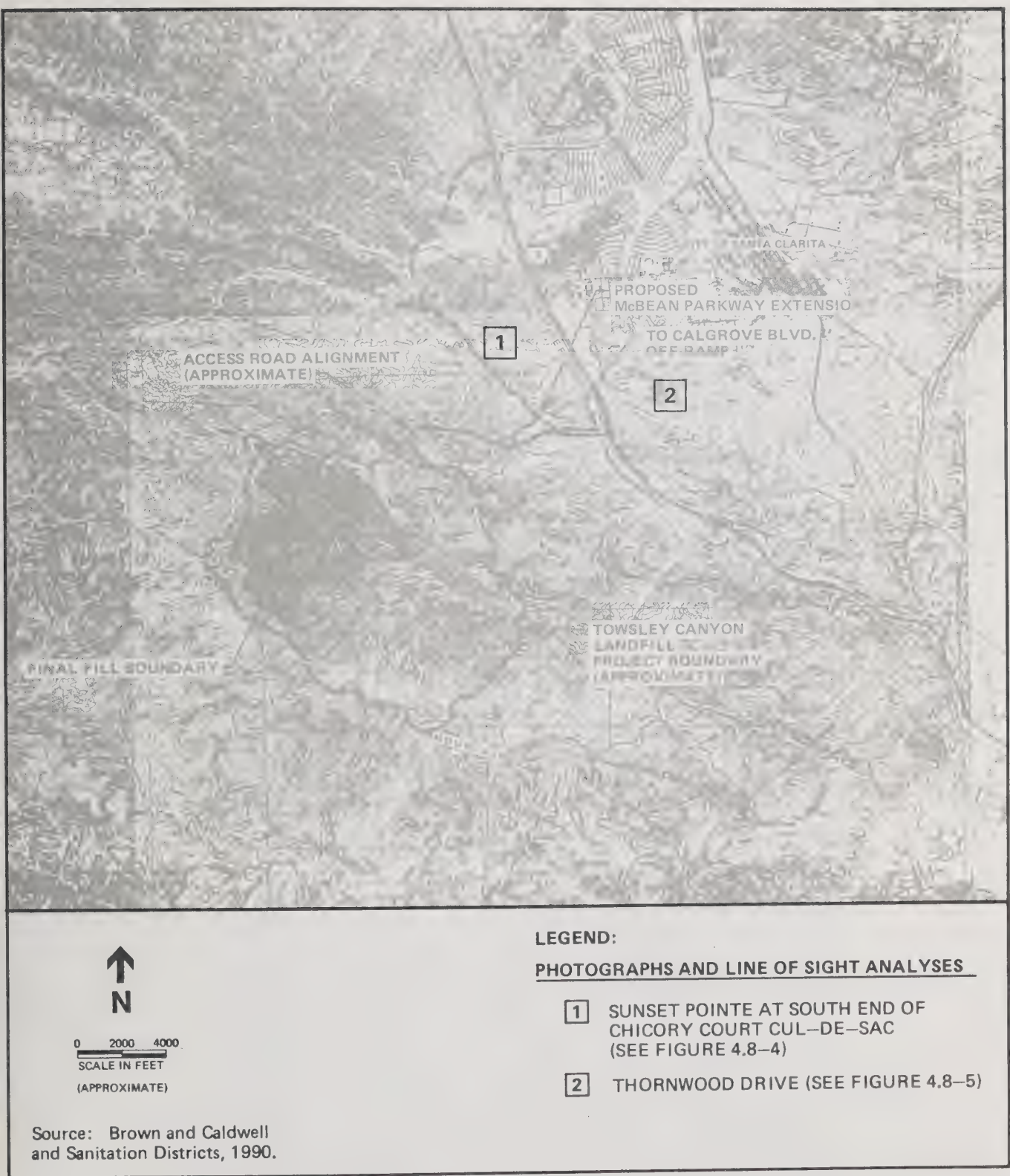
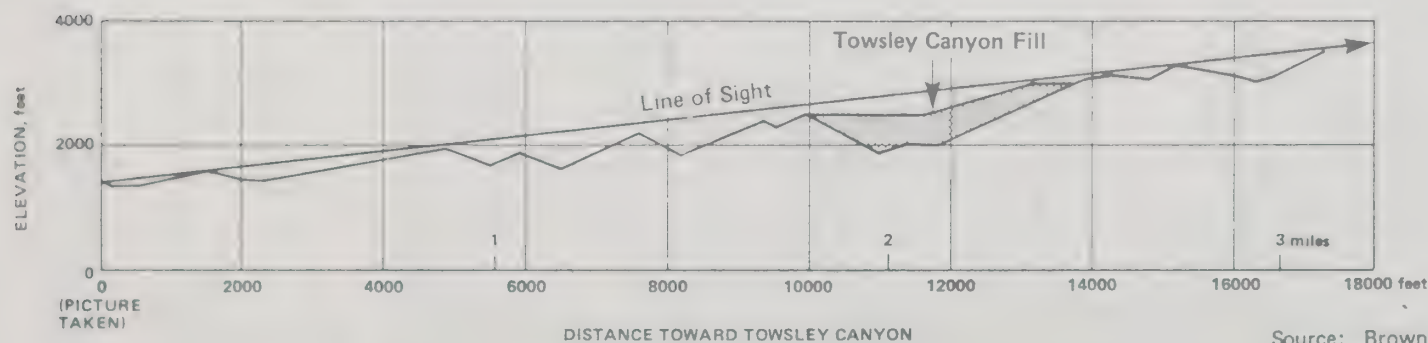


Figure 4.8-3 Location of Photos and Line of Sight Analyses at the Towsley Canyon Landfill Site



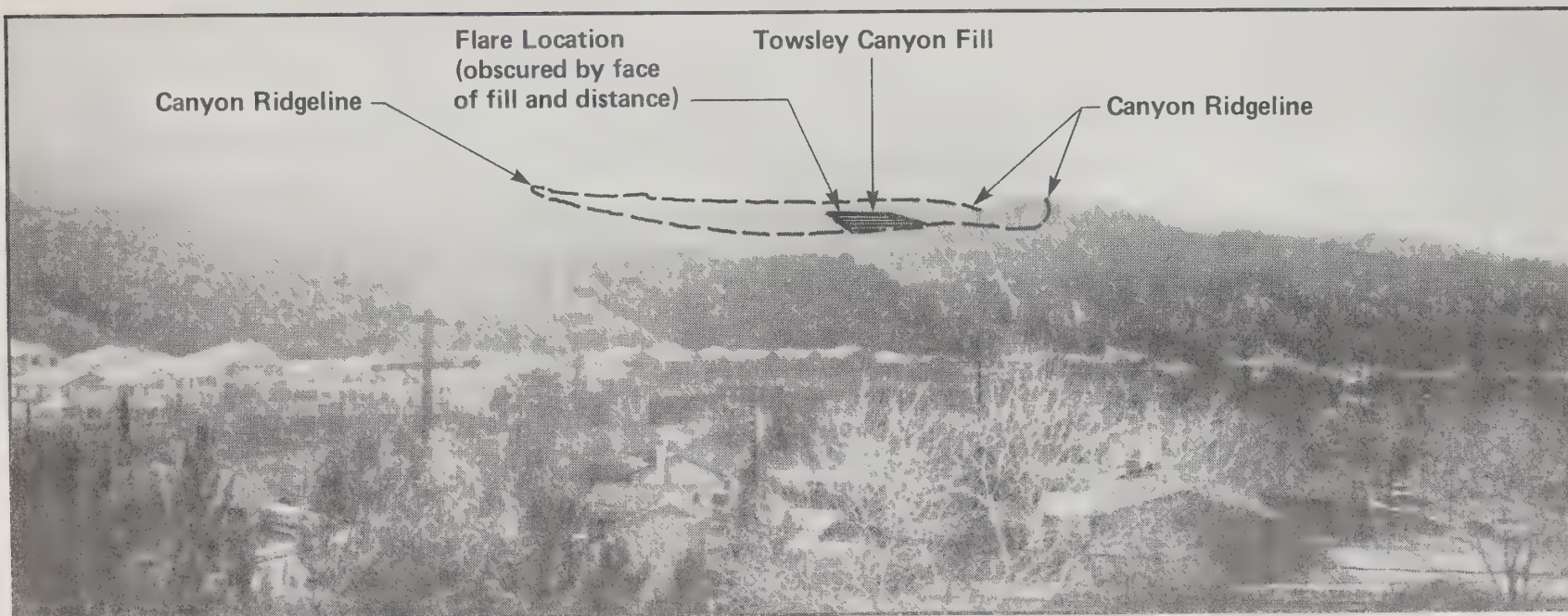
PANORAMIC VIEW FROM SUNSET POINTE



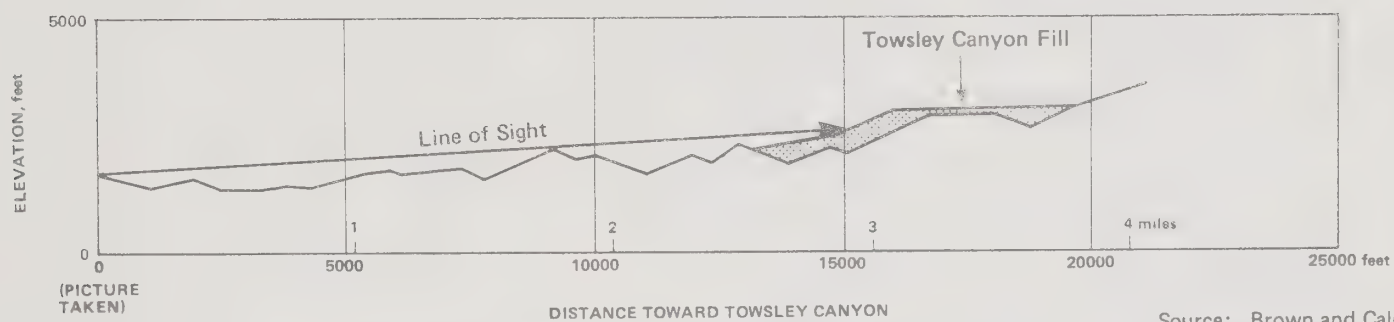
LINE OF SIGHT ANALYSIS (SEE PHOTO ABOVE)

Source: Brown and Caldwell
and Sanitation Districts, 1990.

Figure 4.8-4 View of Towsley Canyon Landfill from Sunset Pointe at South End of Chicory Court Cul-de-Sac



PANORAMIC VIEW FROM THORNWOOD DRIVE



LINE OF SIGHT ANALYSIS (SEE PHOTO ABOVE)

Source: Brown and Caldwell
and Sanitation Districts, 1990.

Figure 4.8-5 View of Towsley Canyon Landfill from Thornwood Drive in Santa Clarita

Figure 4.8-4 shows the view of project features from Thornwood Drive. From this location, the landfill area could be seen and only a small segment of the access road. Based on the line of sight analyses, the landfill area, less than 3 miles away, would become visible at an elevation of about 2,450 feet, or 20 years after operation begins assuming a waste stream of 16,500 tons per day (TPD). Use of earthen berms at the top of the fill and along the front face would shield the operating area from view. Contour grading of fill slopes and permanent excavation slopes would be conducted, along with prompt revegetation to mitigate the visual impact.

Figure 4.8-5 shows the view of project features from the Sunset Pointe area. As can be seen, only a small segment of the access road could be seen from this location. The fill area and flare station would be screened by intervening ridgelines. Thus, no significant impacts would occur.

A landfill gas recovery and disposal system comprised of one gas flaring station and associated blowers and condensate treatment units would be located within the project site as shown on Figure 4.6-4. The station would be located west of the fill between the fill boundary and the site boundary at an elevation of approximately 3,500 feet. The flare tower would initially be less than 20 feet in height. When sufficient gas flows warrant, a new system of large capacity flares would be constructed. These large capacity flares would be up to approximately 60 feet in height. As indicated from Figures 4.8-4 and 4.8-5, the flare station would not be visible due to screening by intervening ridgelines and peaks.

Closure. At the time of closure, all operations facilities would be removed except for the environmental control systems, such as the landfill gas recovery and flaring system. The fill area itself would be completely landscaped to blend with adjacent areas.

Mitigation Measures

Impacts caused by development of the landfill access road would be mitigated by shielding afforded by topographic features, construction of a sound wall (near Towsley Canyon Park), and planting of natural vegetation. The potential landfill would be developed inside an existing canyon with fill grades about 100 feet below adjacent ridgelines. The landfill area would be visible from selected areas in Santa Clarita, but the operating area would always be screened by use of earthen berms along the front face of the landfill. Contour grading of fill slopes and permanent excavation slopes would be conducted along with prompt revegetation for reduction of visual impacts.

Unavoidable Impacts

The existing topography of the canyon would be permanently changed.

4.8.5 Mission-Rustic-Sullivan Canyons

The potential Mission-Rustic-Sullivan Canyons Landfill Complex site is located in the Santa Monica Mountains, south of Mulholland Drive in the City of Los Angeles. As indicated in Chapter 3, the landfill complex would be operated such that Mission Canyon would be operated for the first 12-year period followed by operation of the Rustic-Sullivan Canyons landfill site. Accordingly, Mission Canyon is discussed first in this section followed by Rustic-Sullivan Canyons.

4.8.5.A Mission Canyon

A significant effort in studying the degree of visual access to the landfill operation at Mission Canyon that would be experienced by nearby residents was contained in the 1980 Mission Canyon Landfill Final EIR. The areas studied include the Bel Air Knolls and Bel Air Skycrest communities directly adjacent to Mission Canyon; the Westland, Mirman, Berkeley Hall, and proposed midsite schools; and the Casiano Bel Air and Mandeville Canyon communities. Visual impacts occurring on users of the San Diego Freeway and Mulholland Scenic Parkway were also addressed. Analyses were also performed to assess the degree of visual access from the Ridge Condominiums in the Mountain Gate development.

Although substantially reduced through the use of landscaped berms and movable barriers, short periods of visual access to the refuse placement operation would exist for some of the perimeter residences in the Bel Air Knolls and Bel Air Skycrest developments. These short periods of access could be totally eliminated by construction of temporary fences or other partitions on private residential property if desired by residents of the area. The proposed mitigation measures would alter the existing view from some of the residences in these areas. Some of the Casiano Bel Air residences, located on the eastern perimeter of Sepulveda Canyon, would view portions of the fill operation at minimum distances of approximately 2,500 feet. Some residences in the Mountain Gate Ridge community would view the portion of the operation near the mouth of Mission Canyon. View of landform modification from the San Diego Freeway and Sepulveda Boulevard would be possible for motorists, but view of the refuse placement operations would be prevented. View of modified landform is an unavoidable consequence of filling Mission Canyon. Residents of the area (Bel Air Knolls, Bel Air Skycrest, Casiano Bel Air,

Mountain Gate, etc.) and nearby school and church attendees (Westland, Mirman, Berkeley Hall, University of Judaism, Stephen S. Wise Temple, Bel Air Presbyterian Church, etc.) would view the altered landform.

4.8.5.B Rustic-Sullivan Canyons

Setting

The potential Rustic-Sullivan Landfill site is located in the Santa Monica Mountains, south of Mulholland Drive in the City of Los Angeles. Topanga State Park lies along the western border of Rustic Canyon. Open space and residential development occur south of the canyons and residential development also occur to the east of the canyons. The topography of both canyons is characterized by long, relatively straight drainages bordered by steep-to-very-steep canyon walls. The sides and bottoms of the canyons are densely vegetated. Elevations of the canyons range from approximately 700 to 1,950 feet above sea level.

Impacts

The evaluation of impacts below focuses on the visual changes that would be caused by the potential Rustic-Sullivan Canyons Landfill site. Potential visual changes discussed below are differentiated according to access, landfill development, and closure.

Access. Impacts related to access are related to construction and operation of the access roadway. Construction of the road would cause a visual impact, especially to surrounding residential areas. This impact, however, would be short term in nature and not significant. The road that would be constructed to provide operational access to the landfill would change the visual character of the area along its route. In general, portions of the road would be visible from the residential areas to the north and south of the road and from the residential areas in the top of Mandeville Canyon. Portions of the access road would also be visible from Mulholland Drive.

The view of the access road and truck traffic along it from the residential areas represents a significant adverse visual impact. As indicated later in this section, partial mitigation would be achieved by natural topographic shielding and by planting of natural vegetation to provide screening.

Landfill Development. Features of landfill development that have aesthetic implications include the topographic changes inherent to the filling of a canyon area, especially

during latter years of landfill development, and the landfill gas flaring stations located on ridgelines as shown on Figure 4.6-6. These features would be visible from current and planned trail development in Topanga State Park.

The development of the landfill would change the topographic character of Sullivan and Rustic Canyons significantly. The project site encompasses approximately 2,870 acres of which 745 would ultimately be filled. Approximately 26 percent of the site would be altered by excavation and grading. Small side ridges would be cut to provide the daily soil cover necessary for landfill operation and to provide a suitable base for the fill itself.

Line of sight analyses were performed from three locations to determine if portions of the landfill area would be visible. Figure 4.8-6 shows the location of the areas. The areas may be described as follows:

1. Hub Junction on the trail to Will Rogers Park on Temescal Ridge looking northeast toward Rustic Canyon.
2. From Canyonback Road in the Mountain Gate subdivision looking west.
3. From Mulholland Drive looking south into Sullivan Canyon.

These analyses were done using the height of the final fill to account for the most extreme condition. Figures 4.8-7 through 4.8-9 illustrate the views of project features from these locations.

The line of sight analysis from the trail at Hub Junction (Figure 4.8-7) indicates that Sullivan Canyon landfill activities would be screened by an intervening ridgeline, and flare station No. 1 as well as the Rustic Canyon fill would be visible. Based on the line of sight analysis, the landfill area at Rustic Canyon would become visible at an elevation of about 1,750 feet. This would be at the end of the operating life of this canyon, about 5 1/2 years after filling begins at a rate of 16,500 TPD. Use of earthen berms at the top of the fill and along the front face would shield the operating area from view. Contour grading of fill slopes and permanent excavation slopes would be conducted, along with prompt revegetation to mitigate the visual impact.

Only a small segment of the access road would be visible from Canyonback Road (Figure 4.8-8). Impacts would not be significant.

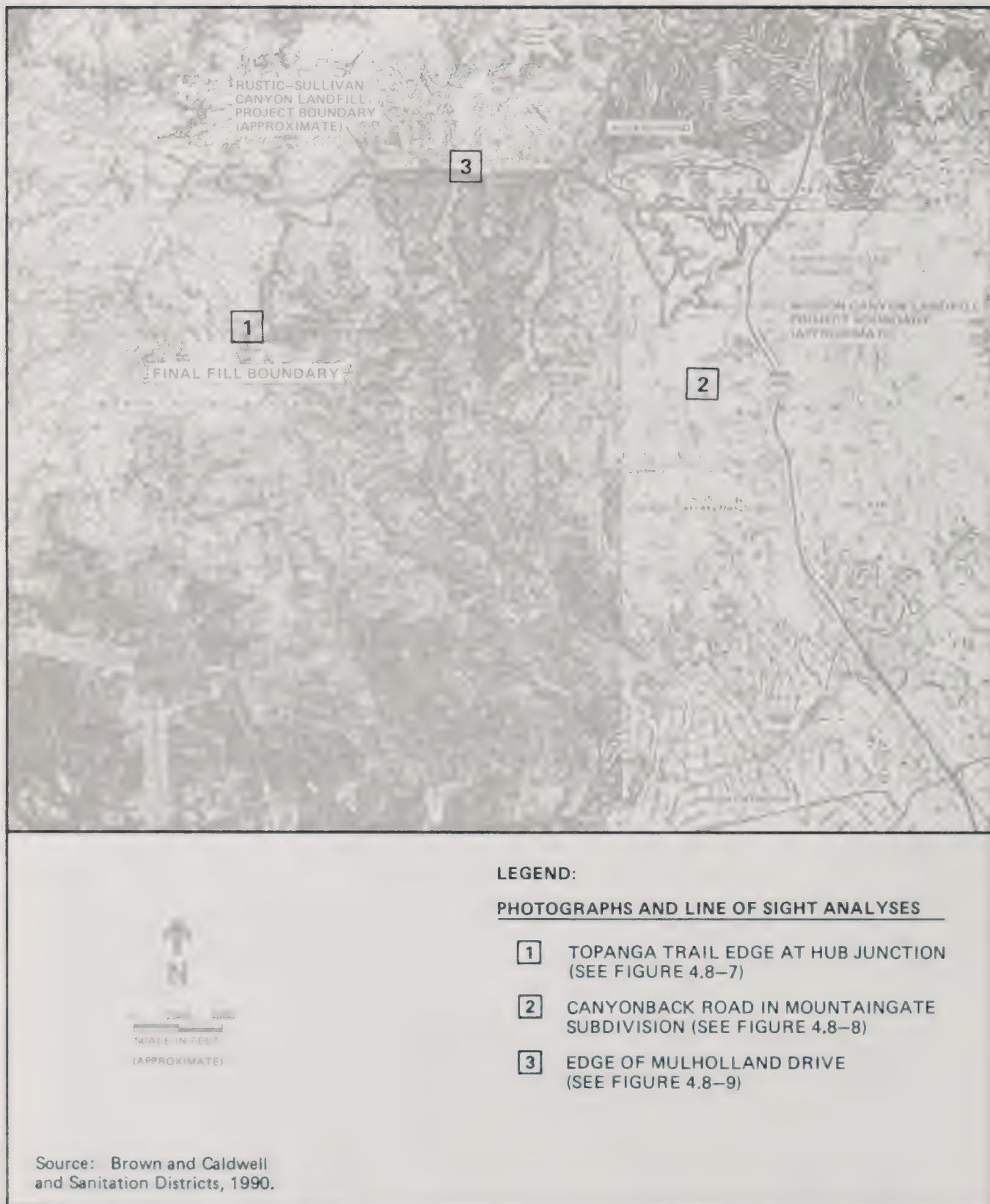
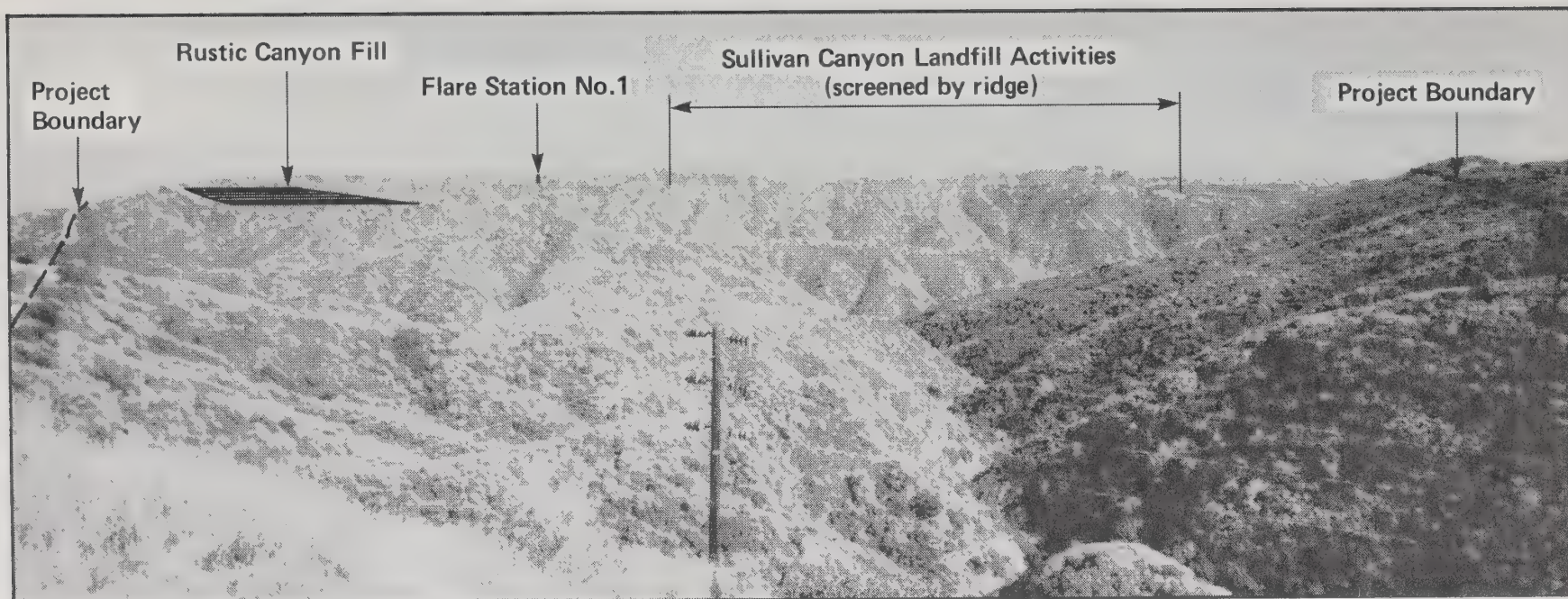
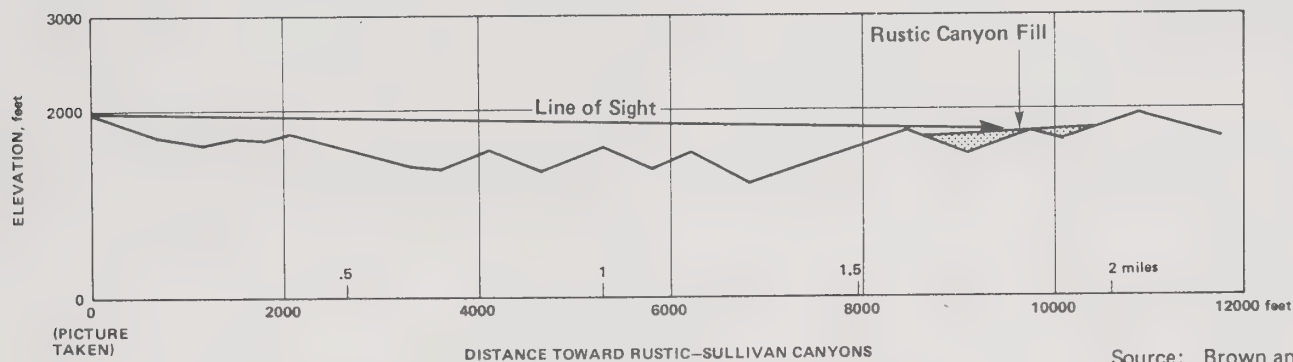


Figure 4.8-6 Location of Photos and Line of Sight Analyses at the Rustic-Sullivan Canyon Landfill Site



PANORAMIC VIEW FROM TRAIL



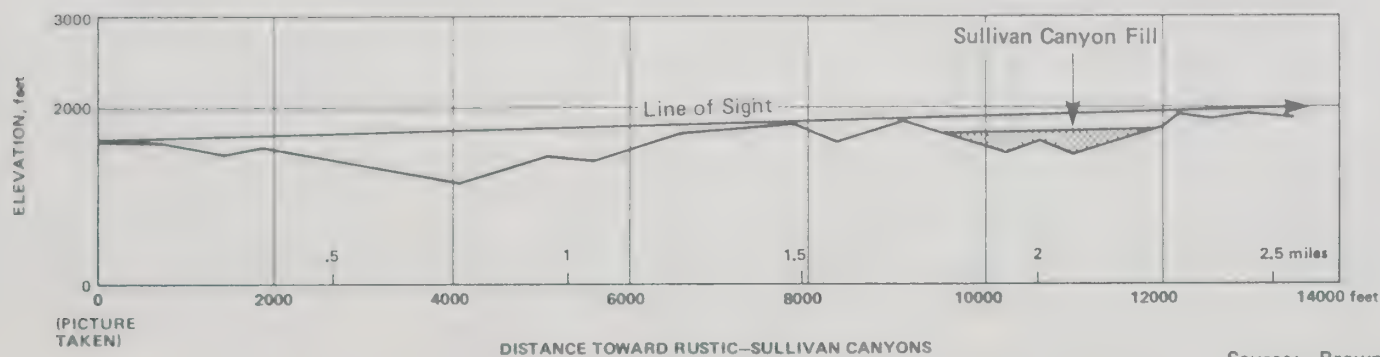
LINE OF SIGHT ANALYSIS (SEE PHOTO ABOVE)

Source: Brown and Caldwell
and Sanitation Districts, 1990.

Figure 4.8-7 View Towards Rustic-Sullivan Canyons Landfill Site from Topanga Trail Edge at HUB Junction



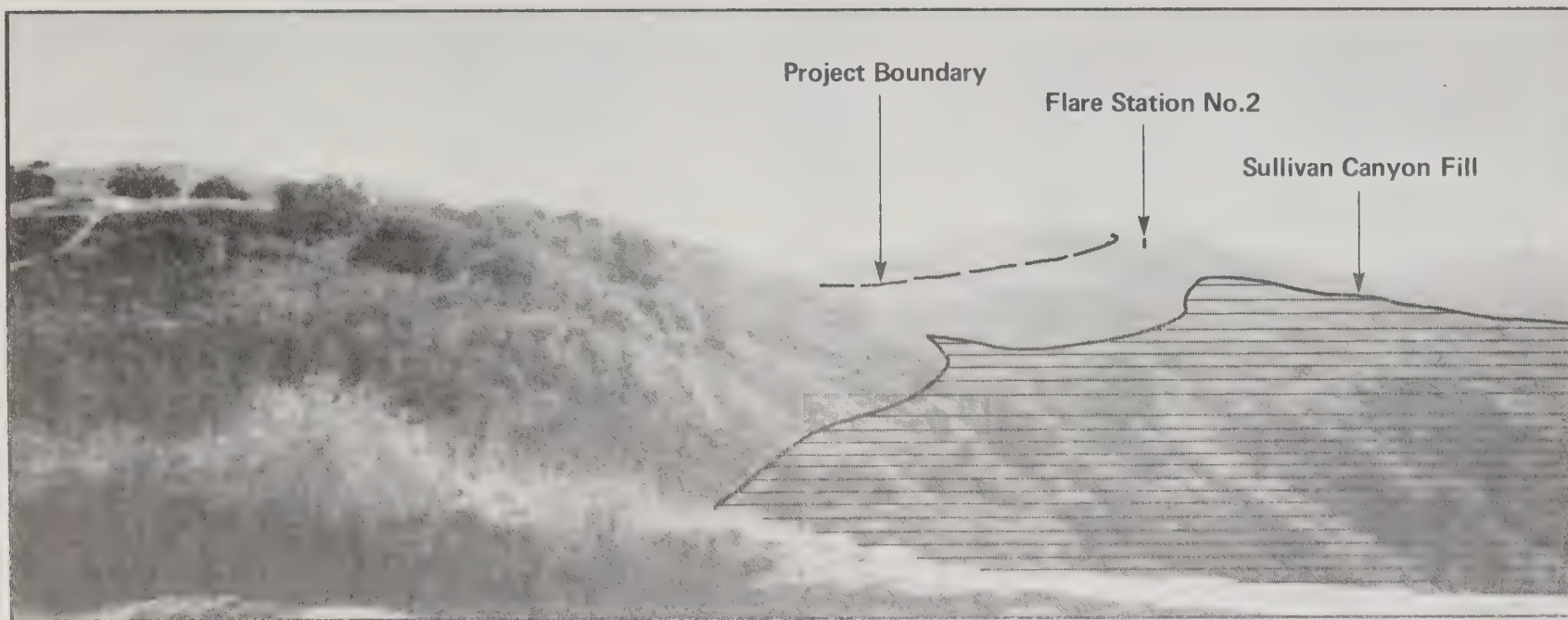
PANORAMIC VIEW FROM CANYONBACK ROAD



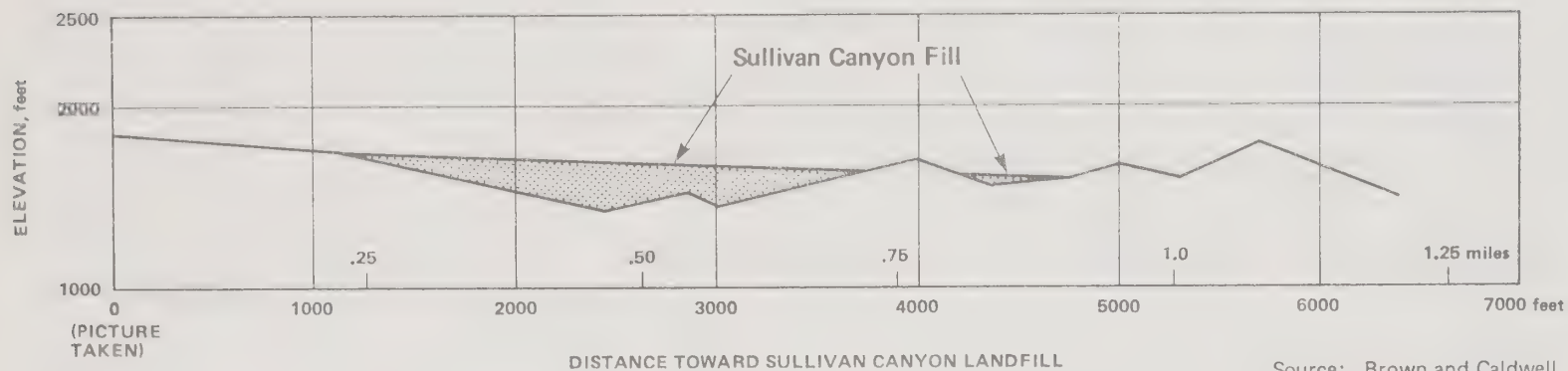
LINE OF SIGHT ANALYSIS (SEE PHOTO ABOVE)

Source: Brown and Caldwell
and Sanitation Districts, 1990.

Figure 4.8-8 View Towards Rustic-Sullivan Canyons Landfill Site from Canyonback Road in Mountaingate Subdivision



PANORAMIC VIEW FROM MULHOLLAND DRIVE



LINE OF SIGHT ANALYSIS (SEE PHOTO ABOVE)

Source: Brown and Caldwell
and Sanitation Districts, 1990.

Figure 4.8-9 View of Sullivan Canyon Standing at the Edge of Mulholland Drive

Figure 4.8-9 indicates that the Sullivan Canyon fill and flare station No. 2 would be visible near the edge of the canyon along Mulholland Drive. This area is in the Mulholland Scenic Parkway and would result in a significant visual impact.

A landfill gas recovery and flaring system comprised of two gas flaring facilities and associated blowers and condensate treatment units would be located within the project site. One flare would be located on the ridge between the two canyons at an elevation of approximately 1,850 feet; the second flare would be located on the eastern ridge of Sullivan Canyon at approximately 1,900 feet (Figure 4.6-6). The flare towers initially would be less than 20 feet in height. When sufficient gas flows warrant, a new system of higher capacity flares would be constructed. The large-capacity flows would be up to 60 feet in height. It is likely that the flares would be visible from some points along hiking trails in Topanga Canyon State Park and from Mulholland Drive. Although both facilities would be surrounded by landscaped earthen berms or walls in order to shield views to the base of the facilities, their prominent locations make it likely that screening would only partially mitigate the visual impact.

Closure. At the time of closure, all operations facilities would be removed except for the landfill gas recovery and flaring system. The fill areas themselves would be landscaped to blend with the adjacent areas.

Mitigation Measures

Impacts caused by development of the landfill access road could be partially mitigated by carefully aligning the road to maximize the shielding afforded by topographic features. Vegetation would be planted to provide additional visual screening. The potential landfill would be developed inside existing canyons with fill grades about 100 feet below adjacent ridgelines. The impact on the view into the landfill areas and flare stations from Mulholland Drive could be partially mitigated by berming and plantings of native vegetation.

Unavoidable Impacts

During the operation of the landfill, truck traffic would be visible from several residential areas and park areas. Although the final fill will be revegetated, the existing topography of the canyons would be permanently changed. Additionally, the flare station would be visually intrusive from a number of locations. Views from the proposed overlook on Mulholland Drive would be significantly impacted.

4.8.6 Cumulative Impact Assessment

The potential landfill sites in combination with other reasonably foreseeable projects in the areas would not result in any cumulative aesthetic impacts. At closure, all potential landfills would be revegetated to blend in with surrounding areas.

4.9 PUBLIC HEALTH AND SAFETY

This section provides an evaluation of the safety issues associated with waste diversion and the potential landfill sites. The health risk assessment associated with air pollutant emissions from the landfill flaring system is discussed in Section 4.6, Air Resources.

4.9.1 Waste Diversion

Materials handling activities commonly contain elements that are potentially hazardous to the safety of workers and others in nearby areas. The uncertainties of mixed waste composition and condition are a source of concern for worker safety. Working with specific materials may involve potential hazards but these are usually amenable to mitigation and control.

Impacts and Mitigation Measures

Impacts and mitigation measures associated with public health and safety issues are discussed below. Because specific facility sitings are not included in this Program Environmental Impact Report (EIR), the discussion is necessarily general in nature.

Collection and Intermediate Handling. Collection of source-separated materials with known characteristics is easier to engineer for safety than a mixed waste stream. Containers and collection equipment can be designed to minimize contact with any material, and the worker can be outfitted with necessary safeguards such as gloves, ear and eye protectors, dust filters, etc. Separating the waste stream into various subunits for collection tends to reduce the weight of each container, thereby reducing the conditions for collector lifting injuries, a common problem among waste haulers.

The use of mobile and stationary material sorting and handling equipment such as shears, balers, shredders, flatteners, conveyor belts, skip loaders, and forklift trucks under conditions of traffic congestion and limited space present potential safety impacts. However, all impacts are subject to mitigation by the application of CAL/OSHA and federal occupational and health standards and proper design. In similar fashion, the handling of materials such as broken glass, sharp or heavy metallics, contaminated containers, etc., can also cause health and safety impacts. These impacts can be mitigated, however, by proper use of personal protective devices and proper design of process equipment.

Ultimate Processing. Regional end-use facilities such as paper mills, detinning plants, glass manufacturing plants, aluminum smelters, and plastic regrinders have elements of hazard in their respective operations. However, all of these are traditional industries, subject to regulation. As such, all are required to mitigate safety hazards within the framework of state and federal regulations.

Unavoidable Impacts

None. Potential adverse impacts can occur during collection and processing at end-use facilities, but proper controls and engineering safeguards and adherence to CAL/OSHA and federal occupational health standards would provide adequate mitigation.

4.9.2 Issues Common to All Landfills

Public health and safety issues are common to all landfills and are not discussed separately for each potential landfill site. The issues include landfill gas migration, hazardous wastes, vectors, fire hazards, site security, and employee and user safety. The risk of upset also is discussed.

Landfill Gas Migration

Landfill gas is produced by the anaerobic (without oxygen) decomposition of organic matter in solid waste. Potential impacts with landfill gas include odor and hazards associated with migration beyond landfill project boundaries. Because the issues of odor and landfill gas are so interrelated, they have been combined and are discussed in Section 4.5. A brief summary of the analysis of landfill gas relative to safety considerations is given below.

The methane component of landfill gas is explosive at certain concentrations. As methane is produced within the landfill cells, internal cell pressures move the gas away from the landfill along paths of least resistance. If it is not contained and if suitable subsurface geologic conditions exist, methane can migrate off site and represent a safety hazard to surrounding residential or commercial land uses.

As indicated in Section 4.5, however, potential impacts associated with landfill gas migration are not significant. This is because the landfill gas control system would be designed and installed at each potential landfill site which would meet the requirements (Rule 1150.1) of the South Coast Air Quality Management District (SCAQMD). Each landfill would be lined (bottom and sideslopes), and a vertical landfill gas well system and horizontal trench system would be installed.

The Sanitation Districts have successfully used the landfill gas control systems at their existing landfills. Detection probes would be installed along the boundary to monitor for subsurface escape of landfill gas. In the unlikely event that landfill gas migration was detected, appropriate corrective measures would be taken immediately to provide containment. The engineering safeguards identified above are supplemented at most potential landfill sites by substantial buffer zones between the fill and surrounding sensitive land uses.

Hazardous Wastes

Each of the potential landfill sites would be Class III waste management units capable of accepting nonhazardous solid wastes. The disposal of hazardous liquid and solid wastes would be prohibited at the site. However, the municipal solid waste (MSW) stream would contain small quantities of technically hazardous wastes resulting from disposal of waste from households and certain commercial and medical facilities. Extensive documentation exists that the level of hazardous wastes in the MSW going to Sanitation Districts landfills is very small and that these small quantities are effectively contained by the much larger mass of nonhazardous solid waste. Nevertheless, under a worst-case scenario, the potential effects of these hazardous wastes include accumulation and leaching into the groundwater and venting into the air as hazardous air emissions. Worker exposure to household hazardous wastes is discussed later in this section.

Setting. Many of the types of hazardous wastes that would likely appear in the waste stream at any of the potential landfill sites are encountered on a day-to-day basis in the home and working environment. Discussion is included below on the planning and regulatory for hazardous wastes and on the occurrence of these wastes in the MSW streams.

Planning Framework. The primary planning document for hazardous waste management in the county is the Los Angeles County Hazardous Wastes Management Plan.⁵³ The intent of the Plan is to provide the public and decision makers with a document containing information and policies for county-wide management of hazardous waste and hazardous materials.

Due to public health and environmental concerns associated with household hazardous waste in the MSW stream, and because there are few if any disposal options for the public, the Los Angeles County (County) Board of Supervisors and the Sanitation Districts Board of Directors approved the implementation of a Household Hazardous Waste Pilot Program on April 26, 1988. This pilot program was jointly conducted by the staffs of the Sanitation Districts

and the County Department of Public Works. The County and Sanitation Districts are currently evaluating an ongoing program for household hazardous waste collection throughout the County. Because it is likely to require 2 to 3 years to implement, both agencies are proceeding with an interim collection program. A series of collection days for the public to drop off household hazardous waste was held in April, May, and June of this year. The interim and permanent collection programs benefit all of the existing and potential landfill sites by further reducing the already small amounts of household hazardous wastes in the solid waste stream.

Occurrence. In a recent report to the state legislature and based on several composition studies conducted in California, the California Waste Management Board (CWMB) estimated that household hazardous waste comprises less than 0.5 percent of MSW in landfills.⁴⁴ Screening by the Sanitation Districts, however, indicates values of less than 0.05 percent of household hazardous waste in their landfills.

In addition to the previously described household hazardous waste programs, two types of programs to detect hazardous waste are in place at Sanitation Districts' operated landfills that would be utilized at the potential sites: a full-time surveillance of the disposal area and a program of random load selection for thorough inspection by trained waste inspectors. The full-time surveillance by the heavy equipment operators intercepts containers 5 gallons and greater in size for proper disposal. In addition to this surveillance activity, five randomly selected loads are thoroughly checked each day for any quantity of hazardous or unacceptable wastes. These programs act as a deterrent because all trucks have an equal chance of being inspected. As a result of these programs, the quantities of hazardous waste received at Sanitation Districts landfills are extremely small. Waste checking programs discussed below under mitigation measures would intercept and prevent burial of a significant portion of this material. However, even if this small quantity were buried, it would be effectively sequestered within the solid waste by absorption into the comparatively dry material.

Regulatory Overview. The federal Resource Conservation and Recovery Act (RCRA) and the state Hazardous Waste Control Law and regulations regulate disposal of hazardous waste in California. The legislative history of RCRA clearly states that Congress did not intend for the small quantities of hazardous material in MSW to be regulated by that law.⁴⁶

The state Department of Health Services (DHS), which regulates the disposal of hazardous materials in California, is in agreement with this position.³⁷

The federal regulations resulting from Section 3002 of RCRA exempt hazardous waste generators which produce less than 100 kilograms per month of hazardous waste. Also exempted are retailers and farmers generating any quantity of hazardous waste. However, RCRA allows individual states to impose more strict rules on hazardous waste disposal. In California, regulations do not allow the blanket exemptions that are allowed by federal regulations. To be exempt from California regulations, a business must demonstrate, to the satisfaction of the DHS, that the hazards presented by its wastes are insignificant. Because of the restrictive state regulations, commercial and industrial hazardous waste disposal, even in small quantities, are subject to state regulations. The state regulations exempt only empty household waste containers (less than 1 gallon) from the hazardous waste rules.

Infectious waste is considered to be hazardous waste under California law. The County of Los Angeles Department of Health Services (as the Local Enforcement Agency (LEA)) policy states that generators of infectious waste must dispose of such material by one of the following methods: (1) by discharge into a sanitary sewer, (2) by incineration, or (3) by sterilization/disinfection and subsequent disposal in a sanitary landfill. All infectious waste must also be segregated at health facilities and placed in red plastic bags. Sterilization is usually performed by means of a heat and pressure treatment process called autoclaving, which changes the appearance of the red bags. Sanitation Districts and County inspectors routinely check existing landfills for unautoclaved infectious wastes.

Title 23, Subchapter 15, of the California Code of Regulations (CCR) requires that a periodic load checking program approved by the DHS and the Regional Water Quality Control Board (RWQCB) be implemented to ensure that the discharge of hazardous wastes at Class III facilities is minimized. Such a program has been in operation at the Sanitation Districts landfills for many years. Proposed federal regulations to amend Subtitle D of RCRA Part 258 would also contain procedures for excluding hazardous waste from landfills through load checking programs. However, because Sanitation Districts has a sophisticated hazardous waste deterrent, detection, and removal program, these proposed regulations are not expected to affect existing Sanitation Districts programs or any of the programs to be implemented at any of the potential landfill sites.

Emergency Response Capabilities. Both the City of Los Angeles Fire Department and the County Fire Department have hazardous materials squads that can respond to a spill in the unlikely event that such an incident occurred along approach roadways or at the potential landfill sites. These individuals are trained to identify hazardous spills, contain spills, conduct rescue operations, and perform emergency mitigation measures.

Impacts. The potential health and safety impacts associated with hazardous wastes in the MSW stream are not considered to be significant. This is because (1) the trace levels of hazardous wastes in the solid waste stream are well-documented, and (2) these trace amounts would be sequestered by the large quantity of comparatively dry solid waste material. In addition, the Sanitation Districts would employ a series of mitigation measures as discussed below that would provide an added margin of safety with respect to protection of the public health and safety. Disposal of materials of a biological origin (infectious waste that has been treated) would not represent a significant impact because this waste would be rendered noninfectious by the generator. In addition, ongoing inspections of the landfill would detect any "red bag" wastes that had not received proper treatment.

Any red bag infectious waste (not autoclaved) which would be detected by landfill personnel would be buried at the landfill. This is a precautionary measure because of the potential risk associated with handling and transporting the wastes to another disposal location. While it is against County policy for health facilities to dispose of unautoclaved infectious wastes in the landfill, it is the opinion of the County Health Department that once disposed of at the landfill, these wastes pose no further health hazard. A report entitled "Disposal of Hospital Wastes Containing Pathogenic Organisms," funded by the U.S. Army Medical Research and Development Command, concluded that "the disposal of infectious hospital waste in sanitary landfills appears to be a feasible and safe method of disposal In addition, there is no evidence of adverse effects on human health or the environment caused by landfilled hospital waste containing pathogenic organisms. Nor has there been any reported contamination of groundwater--or even landfill leachate--that is attributable to landfilled hospital wastes."⁵⁴ In two separate studies of viruses and pathogens in leachate,^{55,56} the results showed very little, if any, evidence of pathogenic contamination. In the virus study,⁵⁵ only two viruses were found in one of the 22 leachate samples. In the pathogen study,⁵⁶ no pathogens were detected in leachate from the landfill studied.

Mitigation Measures. As indicated previously in this section, no hazardous wastes as defined by the state DHS would be acceptable for disposal at any of the potential landfill sites. There would be a program in place at each potential landfill site to provide deterrence as well as to detect and remove from the MSW stream large quantities of hazardous waste.

All vehicles entering the site would be screened for hazardous materials as they pass through the weigh scales. Overhead mirrors would help the scale personnel to visually inspect loads on the larger disposal trucks. To guard against radioactive materials entering the site, a gamma-scintillation counter capable of detecting the presence of very low levels of radioactive waste in the loads would be installed at the scale facility. An alarm would be set off if emissions in excess of 50 kilocounts/minute were detected. Suspect loads would be pulled aside and scanned again to ensure interferences did not cause a false alarm. If a load appeared to contain radioactive materials, a County health inspector would be called to the site, and the suspect load would be taken to an isolated area of the site to be inspected. This system for radioactive wastes is currently in use and successful at Sanitation Districts landfills.

In addition to initial screening at the scale facility, continuous inspection at the disposal area would further control illegal disposal of hazardous materials. Equipment operators and a full-time hazardous waste inspector for each site would continually screen the loads being unloaded and would identify potentially hazardous materials. As indicated below, any hazardous wastes found would be transferred to an approved hazardous waste disposal site or buried on site if the waste cannot be removed from the site without endangering employees or landfill patrons.

Besides the full-time surveillance, a spot check program to monitor for the presence of hazardous wastes would also be implemented. Each day five loads would be selected on an unannounced basis for examination in detail by inspectors. If concealed hazardous wastes were found, the materials would be transferred by licensed haulers to an appropriate hazardous waste disposal site. If it is determined that the waste cannot be removed without danger to employees, the waste would be carefully buried. The absorptive capacity of the refuse in the landfill is more than adequate to sequester the small quantities of hazardous material that infrequently must be buried under such circumstances. The LEA would be notified upon detection of hazardous materials and would determine appropriate disciplinary action for the hazardous waste transporter. In addition to the LEA, the DHS, RWQCB,

California Highway Patrol, and the County District Attorney's Office would be notified of any special waste handling incidents. Offenders would be banned from the landfills.

Once buried, a landfill has a substantial capacity to isolate the waste. Engineered containment systems (i.e., extensive liner and groundwater protection systems and a landfill gas collection system) would be installed at each potential landfill site to meet regulatory agency requirements and provide the maximum protection to the public health and safety and the environment. The purpose of these systems is to mitigate impacts associated with disposal of nonhazardous municipal solid waste. They also serve as backup systems to effectively restrict any gaseous and water emission which may contain contaminants of hazardous waste origin.

Unavoidable Impacts. None. Ongoing checking programs, the prohibition of industrial/commercial hazardous waste disposal, the small quantity of hazardous material contained in municipal refuse, the sequestering features of a sanitary landfill, and the employment of groundwater protection and gas collection systems would reduce potential impacts to insignificance.

Vectors

A vector is defined as any animal which is a potential carrier of disease. Vectors which may be associated with improperly controlled solid waste disposal operations are rodents, insects, and birds. The practice of compacting and covering solid waste daily with a layer of soil was developed, in part, to control disease-carrying agents of waste disposal sites and is required by law (CCR, Title 14, Division 7, Chapter 3, Section 17682). The LEA also has broad authority through the Solid Waste Facilities Permit to require that appropriate measures be taken at a landfill site to control the presence and proliferation of vectors. Each of the three vector forms is discussed below.

Rodents. Nonnative species of rodents, such as the brown (Norwegian) and black (roof) rats (Rattus) and house mice (Mus), are considered to be potential disease vectors. These species can often be found inhabiting well-watered and heavily landscaped areas.

Setting. Several studies conducted at Sanitation Districts landfill sites have evaluated the incidence of rodent species and have not reported finding Rattus on or adjacent to active landfill areas. Significant data exist indicating that Rattus are absent from and cannot survive in native habitats in Southern California.⁴⁸ A native rodent species, the Beechey ground squirrel (Otospermophilus

beecheyi), is a potential vector because this species may be infested with fleas carrying bubonic plague; however, this rodent is not specifically associated with landfill projects except to the extent that it may inhabit newly graded areas.

Studies have been conducted to investigate the survival of Rattus in refuse vehicles and on the top deck of landfills.³¹ Live rodents fitted with radio transmitters were placed in refuse trucks and commercial bins. None of the rats survived the compaction process of the refuse trucks or the compaction process of the disposal operations. Studies at two Sanitation Districts landfills and at landfills in Orange County⁴⁹ showed that rodent vectors brought to the landfill sites were unable to migrate from the disposal areas because they perished during the normal disposal operation.

Impacts. None of the Sanitation Districts active landfills have caused rodent related problems in surrounding areas. Rodent migration from the disposal operation of any of the potential landfill sites to adjacent areas is unlikely to occur. Because of the daily compaction and cover operation, a landfill would not provide a source of food for rat populations.

Mitigation Measures. Two types of mitigation measures exist for the control of rats at a potential landfill site: preventive and corrective. Preventive measures would involve landscaping the slopes and subsequent maintenance of the vegetation. In the event of the presence of Rattus on any areas of the landfill, a corrective type of mitigation measure would be adopted. Trapping programs aimed at eradicating Rattus on the slopes would be instituted, if necessary.

Unavoidable Impacts. None. The Sanitation Districts' active landfills have not caused rodent related problems in surrounding areas.

Birds. Landfills represent an attractive food source for birds, primarily gulls. Western gulls, the most common gull in the coastal zone, reach their highest population numbers onshore during the winter, with the least onshore numbers from April to July when the adults are concentrated at the nesting colonies on the offshore islands.⁵⁰⁻⁵²

Setting. Some landfills can host large numbers of gulls owing to the time of year, location relative to the coastline, and effectiveness of operational practices. The

potential Mission-Rustic-Sullivan, Blind, and Towsley Canyon Landfill sites are located about 5 1/2, 19, and 21 miles from the coastline, respectively.

Impacts. In addition to creating nuisance conditions, increased numbers of gulls in the area of a potential landfill site could result in several potentially significant impacts related to the public health and safety. Gulls are active feeders. If not controlled, they could take bones and other waste materials from the landfill site and can fly to off-site areas near the potential landfill sites to finish their meal, rest, and preen. In a residential area, sea gull droppings, as well as any deposited refuse material, could cause a significant adverse public health impact. However, as discussed below, the Sanitation Districts have effectively minimized the presence of gulls at their landfills through operational practices and use of monofilament nylon lines.

Mitigation Measures. Covering the waste daily reduces the attraction of seagulls to the landfill. However, this measure alone would not prevent gulls from landing in the working area as the refuse is being placed. A very effective measure, which has been used at all Sanitation Districts landfills, is the use of monofilament nylon lines suspended at a height of 30 feet over the active filling operation. These lines are placed at 50- to 100-foot intervals over the working area using poles placed on opposite sides of the working area. The lines effectively disrupt the circling and landing patterns of the seagulls preventing the birds from landing. The use of monofilament lines would reduce potential health and safety impacts to insignificance.

Unavoidable Impacts. None. Use of monofilament lines together with daily cover would be effective control measures.

Flies and Mosquitos. Flies and mosquitos can be potential vectors. Flies are always associated with decaying solid waste, while mosquitos can be associated with standing or sluggishly moving water.

Setting. A study was conducted by a consulting entomologist in cooperation with the County Department of Health Services to evaluate fly vectors at a landfill.³³ This study was conducted at the Mission Canyon 8 Landfill when it was in operation and is applicable to the potential landfill sites.

The study consisted of trapping flies at the landfill, both in native areas surrounding the landfill and in residential areas distant from the landfill for comparison. A second part of the study involved a study of fly breeding at the landfill. The emergence of adult flies through the cover soil would indicate a highly active fly population.

The first part of the study concluded that there is a higher fly population in the area of active filling than in surrounding native areas. However, fly populations in residential areas well removed from the landfill were higher than those detected at the landfill overall.

In the portion of the study dealing with fly breeding, traps were placed on the landfill surface. The degree of adult fly emergence through the cover soil would indicate the survival of larvae and breeding in the buried waste. The results of these tests showed (1) no evidence of fly breeding and (2) no evidence of larvae brought in with the loads of waste surviving to emerge from the covered fill as adult flies. The placement of 9 to 12 inches of cover material is believed to prevent emergence. The landfill cover was also spaded in an effort to detect incipient fly emergence through the cover soil. No emergence was detected.

The Sanitation Districts have also conducted a fly vector investigation of using shredded green waste as daily cover during a short-term evaluation at the Scholl Canyon Landfill. A consulting entomologist was responsible for conducting the fly vector investigation, which was designed to evaluate the suitability of using shredded green waste to act as a barrier to the emergence or attraction of flies. Utilizing a total of 42 fly emergence traps, over a period of 7 days, the results indicated that the shredded green waste does not act as an attractant to flies and acts as a suitable barrier to fly emergence.⁸⁸

Impacts. The results of the Mission Canyon entomological study showed that properly placed cover material (9 to 12 inches or more of soil) prevents fly breeding and that fly populations in the active landfill are less than in the vicinity of human residences. Studies also indicate that shredded green waste does not attract flies and acts as a suitable barrier to fly emergence.⁸⁸ In their inspection program, the LEA would review and recommend improvements in cover practices, if necessary. Fly-related nuisances are not anticipated at any of the potential landfill sites.

On-site water sources at the landfill would consist of a network of surface drainage ditches and stormwater/sedimentation ponds. These drainage facilities could serve as a habitat for the propagation of mosquitos, which could flourish and represent a significant adverse health and nuisance impact. However, use of appropriate control measures as discussed below would reduce the impact to insignificance.

Mitigation Measures. To effectively control mosquitos, puddles or wet areas at the landfill site would be eliminated, and on-site drainage control ponds emptied as soon as possible following storm events. This would eliminate on-site sources of water for mosquito propagation and would have the added benefit of eliminating a possible water source for any gulls that might be present.

Unavoidable Impact. None. Compaction and use of daily cover are effective fly control measures and elimination of standing sources of water would be important for mosquito control.

Fire Hazards

Potential fire hazards are important safety concerns associated with the potential landfill sites. The dry slopes of the potential landfill sites are covered with combustible vegetation including chaparral and coastal sage scrub. Summer and autumn seasons are especially critical periods due to reduced soil moisture and the drying Santa Ana winds. Landfill operations involve heavy equipment handling mixed wastes in the presence of landfill gas. These conditions present a potential fire hazard in any municipal waste landfill. Accordingly, precautions must be taken to minimize the fire risk.

Setting. The potential landfill sites differ in their relative fire hazard potential. Both Blind and Towsley Canyons are in the unincorporated area of the County with the nearest residential areas being 1 to 2 miles away. The Mission-Rustic-Sullivan Landfill site, however, is located at the wildland-urban interface with nearby existing and proposed residential areas being several hundred to several thousand feet away. With the exception of Mission Canyon, the subject canyons lack the public services necessary to help minimize the fire hazard risk. However, public services such as roads and suitable water supply would be improvements made as part of landfill development.

Jurisdictional Authority. The Blind and Towsley Canyon Landfill sites are located within the unincorporated area of the County and therefore subject to requirements of the

County Fire Department. Additionally, portions of Blind Canyon are located in Ventura County and subject to the requirements of the Ventura County Fire Protection District.

The Ventura County Fire Protection District operates 30 fire stations in Ventura County, and service includes Simi Valley. The Los Angeles County Fire Department operates several stations near the site with the closest being in Chatsworth. Additionally, the City of Los Angeles Fire Department has several stations located within 2 to 3 miles of the site, including Fire Station No. 8 located at 11351 Tampa Avenue (east of the site and north of Highway 118), and Fire Station 107 located at 20225 Devonshire Street (southwest of the site and south of Highway 118).

The potential Towsley Canyon Landfill site is within the area served by Division 3 of the County Fire Department. Station 73 is about 5 miles from the landfill site and would be the first station to respond in the event of a fire.

The potential Mission-Rustic-Sullivan Canyons Landfill site is within the jurisdiction of the City of Los Angeles Fire Department. Fire Station 109, located at 16500 Mulholland Drive, is the closest facility to the landfill site.

County and City fire departments maintain mutual aid agreements. These mutual aid agreements obligate the departments to help each other in case of a major fire, if such help is requested. Automatic aid agreements obligate the nearest fire company to respond to a fire regardless of the jurisdiction. The State Office of Emergency Services can be called upon for further aid, if necessary, as can federal agencies.

Regulatory Overview. The local fire departments are the agencies responsible for defining specific fire control requirements for the potential landfill sites. State regulations (California Code of Regulations, Title 14, Chapter 3, Article 7, Section 17703) must be followed, which requires the landfill operator to take adequate measures for prompt fire control as required by local fire authorities. The local fire departments protect life and property by providing fire prevention, fire suppression, fire investigation, hazardous materials response team, and rescue and related emergency services.

Sources of Fire. Fire could be caused at the potential landfill sites when landfill gas or combustible refuse, vegetation, or litter along the access road become ignited by any of the following sources:

- The tipping of hot or smoldering loads (containing hot embers such as charcoal briquettes or fire ashes) or loads that may contain hot cinders buried in the material.
- Sparks from vehicles or machinery, hot exhaust, mufflers, and brakes.
- Lighted cigarettes or matches thrown from vehicles.

On-site storage of petroleum products in the maintenance area for use by operations personnel represents another potential source of fire. Finally, fires started in other areas of the region could spread and be a threat to the landfill patrons and employees.

Impacts. Potential fire hazard impacts relate to the health and safety of landfill patrons and employees. The primary nuisance and potential hazard caused by a landfill fire is the potential for burn injuries and smoke exposure to people near the fire area and the visible smoke emanating from the site. As a nuisance, smoke causes eye and throat irritation, creates unpleasant odors, and detracts from the aesthetics of the location.

Fires that may occur at landfills are typically small and of short duration and usually limited to a small portion of the working face and tipping area. On-site water trucks are constantly in the working area applying water for dust control and, therefore, are available to apply water to smoldering loads in the working area.

Development and operation of the landfill would require substantial excavation, movement, and stockpiling of soil. All vegetation would be removed from the area where filling is taking place. As such, an operating landfill which follows strict fill and cover procedure creates a natural fire break in a region which may otherwise have high fire hazard potential. This has been shown to be the case in a 1989 Turnbull Canyon fire in the Hacienda Heights area of the county that was contained on the west by the presence of Puente Hills Landfill.

Most sanitary landfills have the potential of subsurface combustion of buried refuse. Such fires are triggered by (1) burial of "hot loads" with other refuse material, (2) uncontrolled or improper operation of the landfill gas

control system, or (3) inadvertent burial of chemical wastes which increases the heat activity in a cell and enhances spontaneous combustion. Subsurface fires may result in accelerated or potentially sudden local settlement in the vicinity of a fire and venting of smoke or combustion by-products through the landfill cover. However, the potential for such occurrences is minimal due to several factors:

- Daily monitoring of landfill gas control system to minimize air infiltration.
- Cover soil would separate daily cells of buried waste from one another, minimizing the extent of the subsequent fire.
- Landfill personnel can quickly extinguish subsurface fires with earth-moving equipment and water trucks, thereby minimizing a cause of a subsurface fire.

One potential concern is for refuse which catches fire inside a truck during transport to the landfill site. Such occurrences would be managed by directing the vehicle to an isolated area where the material would be dumped, then extinguished with water from the water trucks and smothered with dirt by the scrapers and dozers. The appropriate fire department would be notified at the same time as the on-site fire response measures were initiated.

Several fuel storage tanks would be used at the potential landfill sites for equipment, vehicle, and domestic heating needs. The storage and use of fuel on the site would meet industrial standards, requirements of the local fire department, and would be handled in a proper and safe manner.

The landfill gas recovery system installed within each landfill would control landfill gas emissions, thereby minimizing the potential risk of fires on the landfill surface from landfill gas. The landfill gas flaring system would incorporate fire detection and suppression systems in accordance with fire department standards.

In summary, the basic characteristics of development and operation (i.e., excavation, fill and cover, landfill gas control system, presence of earth moving equipment, and water supply) are important safeguards in minimizing fire hazard impacts. These and other measures identified below would reduce potentially significant impacts to insignificance.

Mitigation Measures. Development of any of the potential landfill sites would comply with all applicable code and ordinance requirements of the City and County fire departments

for construction, access, water mains, fire flows, and fire hydrants. In the event of a fire, site water vehicles would be dispatched to the fire area to begin fire control. Local fire departments would be immediately alerted. Crawler tractors would also be utilized to cover exposed fires, and scrapers would transport cover soil to the fire area. Fire extinguishers would be installed on all site equipment and vehicles for extinguishing small fires.

Shredded green waste would only be applied to the daily working face of the refuse cell as daily cover, while soil would be used on the sides and top and bottom of the refuse cell. These measures, along with the presence of water trucks, would mitigate significant fire impacts.

"No Smoking" signs would be posted near the scale area. Bare ground would be maintained around the disposal areas to provide a fire break, and appropriate water supply facilities would be available at each site to fill water vehicles. Caution would always be exercised around brush-covered areas. Fire hydrants would be provided at regular intervals around the perimeter of each site where feasible, including at the scale area, and at the landfill gas flare station.

In the event an incoming refuse truck is carrying a smoldering load, the vehicle would be directed to an isolated area where the material would be dumped, extinguished with water, and covered with dirt. The appropriate fire department would be notified.

Unavoidable Impacts. None. Adherence to applicable code and ordinance requirements and use of on-site resources would be effective in reducing potentially significant impacts to insignificance.

Site Security

The concern over site security is related primarily to the unauthorized dumping of wastes when a potential landfill would be closed and possible trespassing by unauthorized persons.

Setting. Hours of site operations would most likely be 6 a.m. to 5 p.m., 6 days each week (Monday through Saturday), with the exception of certain holidays.

From a regulatory standpoint, CCR Title 14 addresses site security, requiring each landfill site to have a perimeter barrier or topographic constraint designed to discourage unauthorized entry by persons or vehicles.

Impacts. The primary reason for proper site security is to control the potential unauthorized dumping of waste which can occur when a landfill is closed. These wastes can include material which is typically accepted at the site as well as prohibited material. Also of concern would be potential vandalism and accidental human or domestic animal contact with wastes, heavy equipment or above ground tanks used for storage of petroleum fuels. These are potentially significant impacts, but with incorporation of the mitigation measures identified below, they would be reduced to insignificance.

Mitigation Measures. Security at the potential landfill sites would be provided by chain link fencing of the perimeter where required. Because portions of the project boundaries of all the landfill sites are particularly rugged and not accessible, fencing would likely not be required in all areas. A lockable gate would be provided at the entrance of each potential landfill site.

During nonoperating hours, each potential landfill site would be patrolled by a private guard service. In addition, the scale house would be equipped with an alarm system. Unauthorized access would not be permitted at any time, and violators of these requirements would face suspension of disposal privileges as well as other legal actions. Finally, all traffic would be monitored at the scale area, which would be the only point of public access to each landfill site.

Unavoidable Impacts. None. Use of fencing and standard precautionary measures would reduce potential site security impacts to insignificance.

Employee and User Safety

Landfills are similar to major construction projects in that the movements and operations of heavy equipment and truck traffic generate hazards to both employees and customers using the site. Unauthorized access and uncontrolled travel, discussed in the previous section, can add to these hazards. An additional hazard is posed by worker exposure to household hazardous wastes at the working face of the landfill.

Setting. Under state law (CCR, Title 14, Chapter 3, Article 6, Section 17472) a landfill site must have a perimeter barrier or topographic restraint to discourage unauthorized entry by persons or vehicles. Site operators are also required "to be trained in site operation and maintenance, with an emphasis on safety, health, environmental controls, and emergency procedures."

Impacts. Each of the potential landfill sites would be open to municipal collection agencies, private collection companies and to the general public. Safety problems at a landfill can occur from the operation of heavy equipment and collection trucks and from exposure to objects and materials contained in waste. Bodily injury from vehicles, exposure to wastes, dust inhalation, and elevated noise levels are potential impacts (potential noise impacts are addressed in Chapter 4, Section 4.7, Noise). In addition, if security measures are not in place, unauthorized dumping of waste could occur when the landfill was closed.

Compaction and covering wastes would be by machinery and not directly by workers. Mechanics who service or clean equipment could come in contact with waste attached to the tracks on equipment. Customers are not likely to come directly in contact with waste except for waste unloaded by hand by the customer. Potential types of impacts from waste contact are infection by microorganisms present in putrescent or infectious waste and physical injury from materials in the waste such as glass or nails. These potentially significant impacts can be mitigated to insignificance through implementation of appropriate mitigation measures.

Mitigation Measures. Site security mitigation measures discussed in the preceding section would be important in reducing employee and user safety impacts. These measures include fencing, controlled access with lockable gates, security patrols, and monitoring of incoming traffic and landfill patrons.

In addition, training would be provided to site employees in site safety, first aid, accident prevention, and hazardous waste recognition, including emergency measures related to hazardous waste exposure. Appropriate safety equipment such as dust mask, goggles, and gloves would be provided to employees. Proper communication facilities would also be provided between operations areas, the office, and any necessary emergency responders. Finally, accessible first aid supplies, an emergency eye wash station, and shower would be provided on-site. Implementation of these mitigation measures would reduce employee and user safety impacts to insignificance.

Unavoidable Impacts. None.

Risk of Upset

The monitoring and control programs and facilities that would be implemented at the potential landfill sites make the chances of a significant failure or breakdown of the landfill environmental control facility extremely remote. The proven

methods of waste handling and sanitary landfilling to be employed would protect the overall integrity of each site. Cover material would be applied to all newly placed refuse fill at the end of each operating day, intermediate soil cover would be applied over areas that would not receive another lift in the near term, and a thick final cover would be applied to all permanent fill slopes. The landfill surface would be constantly checked for cracks, and any local failures discovered would be promptly filled and recompactd. Landscaping and grading for proper drainage would further ensure the integrity of the landfill and its cover.

Various other monitoring and control measures are also discussed in this EIR. In particular, landfill gas management and monitoring which includes landfill gas control systems and monitoring probes are discussed in detail in Section 4.1; groundwater and surface water quality monitoring including groundwater quality monitoring wells and piezometers are discussed in Section 4.2. All of the control and monitoring installations would undergo routine inspection and maintenance. The control and monitoring facilities would include landfill gas monitoring probes, a landfill gas management system, and the groundwater quality monitoring wells and piezometers. In addition, a groundwater control system comprised of subsurface barriers and associated extraction and monitoring wells would be inspected and maintained on a regular basis. Following the completion of landfill operations, all systems would continue to be operated and maintained as necessary to protect the integrity of the site.

The control measures to be implemented at each site make the possibility of failure extremely remote, and the monitoring systems would provide rapid notification of any developing problems. If the possibility of off-site adverse effects ever occurred due to the landfill operation, all local regulatory agencies and governments would be notified.

4.9.3 Cumulative Impact Assessment

Development of the potential landfill sites and proposed developments in the project vicinities would not result in any significant cumulative public health and safety impacts.

4.10 CULTURAL AND PALEONTOLOGIC RESOURCES

This section provides a summary evaluation of cultural and paleontologic resources and issues associated with potential landfills. The scope of this evaluation covers history, ethnography, Native American concerns, historical and prehistoric archaeology, and paleontology. Information presented here is based upon studies designed to comply with the California Environmental Quality Act, CEQA EIR Guidelines, and County specifications for inventory and environmental analysis of archaeological and paleontologic resources. Tasks included library and archival research, records searches, interviews, field surveys, documentation and evaluation of resources, assessment of potential impacts, and development of recommendations for the mitigation of impacts. Methods, findings, and evaluations are detailed in the cultural and paleontologic technical report, prepared by INFOTEC Research, Inc.

4.10.1 Regional Environment

The regional environments of the potential landfill sites are discussed below. Because of their proximity, Blind and Towsley Canyons are discussed together.

Blind and Towsley Canyons

Because of their rugged topography and remote locations away from natural routes of travel, Blind and Towsley canyons were not intensively occupied by prehistoric peoples. Similarly, historic Indian use of these canyons apparently was limited to occasional hunting, gathering, and mineral-extraction activities by small groups whose principal settlements were elsewhere. The ethnographic and prehistoric archaeological sensitivities of these canyons thus are generally low, partly because of the minimal use of the areas by Indians in the past, and partly because the forces of erosion and aggradation within the canyons have removed or buried archaeological evidence.

Historic land uses in the Blind Canyon area have been of limited scope and intensity. Situated partly within the Rancho San Jose' de Gracia de Simi land grant, Blind Canyon witnessed grazing and other ranching activities, beginning in the 1870s. Towsley Canyon was the site of petroleum exploration as early as the 1860s, drilling in the 1870s, and oil production thereafter. Historical archaeological sites and features preserved in this canyon relate mostly to early oil exploration and production, but ranching and other land uses are

represented also. Accordingly, portions of the study area are of moderate to high sensitivity with respect to historical archaeology.

Relative to paleontology, northern Blind Canyon is highly sensitive, with numerous fossil localities; the remainder of Blind Canyon is of undetermined paleontologic sensitivity. Towsley Canyon features three units of fossiliferous rocks separated by a formation of unknown paleontologic potentials.

Mission-Rustic-Sullivan Canyons

These steep-walled canyons in the eastern Santa Monica Mountains were not occupied intensively by prehistoric peoples. Remote location, rugged terrain, lack of permanent springs or streams, and dense brushfields made the canyons less desirable for settlement than was the rich coastal zone only 6 miles to the south. Indian use of the canyons probably was limited to occasional hunting and/or gathering activities by groups whose principal settlements were elsewhere. The ethnographic and prehistoric archaeological sensitivities of these canyons thus are generally low, partly because of the minimal use of the areas by Indians in the past, and partly because of the forces of erosion and aggradation within the canyons have removed or buried archaeological evidence.

During the 1820s, Francisco Sepulveda and Agostino Machado were granted the Rancho San Vicente y Santa Monica, which ultimately came to include Mission and Rustic-Sullivan Canyons. The rancho prospered by using Indian labor and running large herds of cattle, although the canyons may have been little used because of wolves, bears, and mountain lions. In 1872, the rancho was purchased by Robert S. Baker, who in turn later sold much of the land to John P. Jones. In 1897, the entire area was acquired by the Santa Monica Land and Water Company. None of these parties developed any of the lands in Mission Canyon or Rustic-Sullivan Canyons. In 1923, the canyons were included in a 22,000-acre parcel transferred to the Santa Monica Mountain Park Company. During the subsequent three decades, a number of "ranches," for recreational purposes, were established in the Rustic Canyon vicinity. Other land sales followed, none of which resulted in significant development or modification of the Mission-Rustic-Sullivan study area.

With regard to paleontology, virtually all of the Rustic-Sullivan Canyons area is underlain by Santa Monica Slate of low paleontologic sensitivity. At the western margin of the Rustic Canyon area are Trabuco Formation and Tuna Canyon Formation sediments of moderate and high sensitivity, respectively. These sensitive formations, however, lie outside of the fill area of the potential landfill. Much of the Mission Canyon

area features Santa Monica Slate. The northern end of Mission Canyon and portions of the potential access route between Mission Canyon and Sullivan Canyon are underlain by Modelo Formation sediments of high paleontologic sensitivity.

4.10.2 Waste Diversion

The waste-diversion component of the Integrated Solid Waste Management System may include source waste reduction, residential/commercial recycling, recycling at solid waste facilities, and composting/utilization of green waste. None of these activities are likely to impact cultural or paleontologic resources. Indeed, to the extent that waste-diversion measures reduce landfill requirements, potential impacts on such resources are reduced concomitantly. Nonetheless, some impacts would be expected where waste drop-off/buy-back, storage, recycling, and other diversion facilities are constructed, expanded, or operated. Impacts could involve damage or removal of historic properties, archaeological remains, or geologic sediments with fossils, as well as disturbance of places important to Native Americans. Such impacts typically can be identified during environmental review (under the California Environmental Quality Act) of the specific project. Mitigation of impacts can be accomplished variously by avoidance, project redesign, resource study and documentation, or excavation and specimen/data recovery.

4.10.3 Issues Common to All Landfills

Development and operation of landfills generally may (1) result in the burial or removal of cultural and paleontologic resources, (2) compromise integrity of setting, even when resources are preserved, and (3) preclude access to resources for future study or interpretation. However, few, if any, cultural and paleontologic resource issues are common to all landfills. Such resources tend to be unique and site- or locality-specific. Impacts typically are assessed and mitigation measures developed also on a site- or locality-specific basis rather than as generic diagnoses and prescriptions.

4.10.4 Blind Canyon

The following subsections briefly describe the Blind Canyon study area; review archaeological, historic, ethnographic, and paleontologic investigations; summarize important findings; assess potential impacts; and recommend measures to mitigate possible impacts.

Setting

A funnel-shaped drainage at elevations of 1,475 to 2,700 feet above mean sea level (AMSL), Blind Canyon is situated on the southern flank of the Santa Susana Mountains approximately 18 miles north of the coast. The canyon is underlain by at least seven geologic formations, chiefly marine sediments (sandstone, siltstone, shale) with some terrestrial conglomerates of Cretaceous to Holocene age (35 million years ago to present). Although streams in Blind Canyon are seasonal, runoff and erosion have been heavy. The canyon is dominated by steep, rocky slopes and sharp ridges. Massive rock outcrops and weathered cliffs form a dramatic and desolate landscape. Native vegetation here consists of sage and chaparral communities on the slopes and riparian, or occasionally oak-woodland, communities on the canyon floor.

Archaeology. Archaeological studies included background research into local prehistoric and historical archaeology; records searches at the Regional Information Center of the California Archaeological Inventory in Los Angeles; examination of the National Register of Historic places, rosters of State Historic Landmarks and Points of Historical Interest, and historic maps for possible reference to cultural sites in the study area; locality-specific ethnographic and historical research; and intensive field surveys by experienced professional archaeologists. The archaeologists surveyed transects, spaced approximately 33 feet apart in accessible portions of the potential landfill site. Canyon bottoms, rock overhangs, and large boulders were searched most intensively for possible archaeological evidence. In some places, steep slopes and/or impenetrable brush precluded systematic coverage; consequently, not all locations were surveyed with the same intensity.

No archaeological resources were found in the Blind Canyon potential landfill area. However, one site--a rockshelter (CA-Ven-1011) with associated cores and flakes of exotic lithic materials, and with possible subsurface cultural deposits adjacent--was discovered and recorded on the proposed alignment of the possible access road to the landfill site. This site has scientific information potential and is considered important.

Ethnography/Native American Issues. Blind Canyon lies within the traditional territory of the Chumash, or possibly the Tataviam, Indians. Ethnographic studies included background research, interviews of Indian consultants, and field visits with representatives of two Indian groups. These

endeavors did not reveal knowledge of former Indian settlements in Blind Canyon. The Indians who visited the field have been advised of the nearby archaeological rockshelter (CA-Ven-1011; supra).

Paleontology. Paleontologic studies involved background library research and examination of museum comparative collections, review of unpublished geologic maps and reports, field surveys, and evaluation of past and new discoveries. Much of Blind Canyon and the potential access corridor are underlain by Chatsworth Formation sediments and Simi Conglomerates of unknown paleontologic importance. The northern portion of the canyon, however, features numerous fossil localities in exposures of Santa Susana, Llajas, Saugus, and Modelo formations--all of high, or moderate-to-high, paleontologic significance.

Impacts

Potential impacts of developing the Blind Canyon Landfill site on the archeological ethrographic and paleontological resources are discussed below.

Archaeology. Because no archaeological remains in Blind Canyon were encountered in the course of background research or field surveys, no impacts on archaeological resources are expected to result from landfill development in this location. Construction of the access road, however, could damage or remove the rockshelter (CA-Ven-1011), resulting in a loss of valuable information about early Indian activities in Blind Canyon. However, implementation of appropriate measures, as discussed below, would mitigate potential impacts to insignificance.

Ethnography/Native American Issues. Indian consultants expressed concern generally about potential loss of natural and cultural resources that might attend any landfill development, and want to see such impacts avoided. The greatest concern was that graves not be disturbed. Nonetheless, no specific ethnographic resources (e.g., former settlements, cemeteries, gathering areas, or places of religious importance) were identified in the potential Blind Canyon Landfill area and no impacts are anticipated.

Paleontology. Potential impacts on paleontologic resources include grading (site preparation), landfill operations, and removal of cover material. Such actions could disturb fossiliferous rocks, resulting in the potential loss of valuable scientific data and specimens. The significance of potential impacts would depend upon the nature, extent, and importance of the affected sediments, as well as the intensity of the

disturbance. There is a high potential for significant impacts to paleontologic resources in northern Blind Canyon. However, these impacts can be mitigated to insignificance by implementation of measures discussed below.

Mitigation Measures

Measures to mitigate any significant impacts identified are discussed below. Because subsurface resources may be encountered during development of the landfill project, precautionary measures are included to mitigate potential impacts.

Archaeology. If possible, the access road to Blind Canyon would be designed to avoid the rockshelter (CA-Ven-1011). If avoidance is not feasible, professional archaeologists would systematically collect surface specimens and test subsurface deposits at CA-Ven-1011 to ascertain data potentials and integrity. No further work would be required if data potentials prove negligible. In the event that important specimens and data are confirmed during testing, a program of excavations would be designed and implemented to reveal a representative sample of the site's structure and contents. This would reduce the impacts to a level of insignificance.

Although no impacts on archaeological resources are expected in the potential Blind Canyon landfill area, the possibility exists that subsurface archaeological remains may come to light during site preparation or road construction. In such an event, all earthmoving would cease immediately at the discovery site, and a professional archaeologist would be called in to evaluate the remains and their context. If the resource is deemed important (per the criteria set forth in the CEQA EIR Guidelines: Appendix K), procedures to mitigate the impact (e.g., preservation in place or recovery of specimens and data through excavation) would be designed and implemented.

Ethnography/Native American Issues. Since no ethnographic settlements, cemeteries, gathering areas, or other places important to Native Americans are known in Blind Canyon, no impacts are anticipated, and no mitigation measures are recommended. In the event that subsurface archaeological remains come to light during construction, however, local Indians would be consulted and invited to participate in decision making regarding the disposition of human remains and curation of artifacts.

Paleontology. Potential impacts would be mitigated to insignificant levels through a program of monitoring, collection of specimens and data, analysis of findings, and publication of reports, all under supervision of a professional paleontologist.

Unavoidable Impacts

Unavoidable impacts are discussed below.

Archaeology. No unavoidable significant impacts on known archaeological resources would be anticipated if the Blind Canyon Landfill, as presently envisioned, were to be developed. Archaeological site CA-Ven-1011 would be directly impacted by construction of the access road, but this impact would be reduced to insignificance by implementing the mitigation measures discussed above.

Ethnography/Native American Issues. No unavoidable impacts on known ethnographic resources or places of significance to Native Americans are anticipated with development of the potential Blind Canyon Landfill.

Paleontology. Given the extent of fossiliferous sediments in Blind Canyon, some impacts on paleontological resources would be unavoidable if the Blind Canyon Landfill were to be developed. However, such impacts could be mitigated to insignificant levels.

4.10.5 Towsley Canyon

The following subsections briefly describe the Towsley Canyon study area; review archaeological, historic, ethnographic, and paleontologic investigations; summarize important findings; and recommend measures to mitigate possible impacts.

Setting

Towsley Canyon is located in the southern Santa Susana Mountains four miles northeast of Blind Canyon and southwest of Santa Clarita. A bowl-shaped drainage, Towsley Canyon reaches from Oat Mountain (3,600 feet) on the west to Gavin Canyon (1,575 feet) on the east. Small, ephemeral streams issue from Towsley Canyon. Bedrock here consists of faulted marine sandstones, shales, siltstones, and conglomerates. Differential erosion of these rocks has produced rough terrain with steep slopes, razorback ridges, and narrow, V-shaped valleys. Slopes and ridge crests support chaparral and sage communities, while canyon bottoms sustain riparian vegetation.

Archaeology. Archaeological studies included background research, records searches at the Regional Information Center of the California Archaeological Inventory, field surveys of the potential landfill sites, additional library research on particular historic resources, and evaluation of archaeological resources. Surveys resulted in the discovery and recording of one prehistoric and three historic sites and other historical resources in Towsley Canyon.

Two historic sites, LAn-1592H and -1593H, were documented in lower Towsley Canyon. The first of these consists of the remains of a small dwelling and associated domestic artifacts, dating to the 1940s or later. The second is a concrete pad evidently related to oil production during the mid twentieth century. Another, more complex site (LAn-1594H)--including a reservoir, several groups of structures, and abandoned equipment--was documented in upper Towsley Canyon; this appears to have been a satellite ranch or line camp associated with the main ranch of William Orcutt and probably dating to the 1930s or later. The remaining historic features are portions of a wooden bridge or loading dock (C.R.-1), an abandoned oil tank (C.R.-2), a circular arrangement of boulders (C.R.-3), a stock corral (C.R.-4), artifact scatters, oil wells, machinery, and debris.

The only Indian archaeological site discovered was a small rockshelter (LAn-1598) containing three panels of red and black pictographs, among them both abstract geometric and representational forms.

Preliminary evaluation of the archaeological resources indicate that LAn-1594H may be "important" (per the CEQA EIR Guidelines: Appendix K) or "significant" (per 36 CFR 60.4). The rockshelter site, LAn-1598, is important, or significant, unequivocally. C.R.-1 lacks integrity, and is not likely to be important as an individual cultural feature. C.R.-2 is an oil tank, not an archaeological item but a historical feature possibly associated with early oil production. C.R.-3 and -4 are not significant cultural resources; they have no further information potential.

Ethnography/Native American Issues. Towsley Canyon lies within the traditional territory of the Chumash or perhaps the Tataviam Indians. Ethnographic studies included background research, interviews of Indian consultants, and field visits to the project with representatives of two Indian groups. Although these investigations did not reveal knowledge of former Indian settlements in Towsley Canyon, consultants were generally aware of local biotic resources that would have been valued by their ancestors. Additionally, several accounts make

reference to early historic Indian use of oil, asphaltum, and red ochre in Towsley Canyon. The Indians were advised of the nearby rock art site (LAN-1598; supra).

Paleontology. Paleontologic studies involved background library research and examination of museum comparative collections, review of unpublished geologic maps and reports, field survey of the potential landfill site, and evaluation of past and new discoveries. Much of Towsley Canyon and adjacent portions of the possible access corridor are underlain by Towsley Formation rocks of unknown paleontologic value. Pico Formation units, and Modelo Formation sediments of moderate sensitivity, also occur in this study area. Thirteen fossil localities have been recorded in the Towsley Canyon vicinity.

Impacts

Potential impacts of developing the Towsley Canyon Landfill site on the archaeological, ethnographic, and paleontological resources are discussed below.

Archaeology. As proposed, the fill design and access road of the potential Towsley Canyon Landfill would not impact known archaeological resources.

Ethnography/Native American Issues. Indian consultants expressed concern generally about the potential loss of natural and cultural resources that attend any landfill development and expressed the desire to see such impacts avoided. The greatest concern was that graves not be disturbed. Towsley Canyon is known to have been a source of asphaltum and red ochre and probably served as a hunting/gathering area for historic Indians. Otherwise, no specific ethnographic resources (e.g., former settlements, cemeteries, or places of religious importance) have been identified in the potential Towsley Canyon Landfill area, and no impacts to such resources are anticipated.

Paleontology. Potential impacts on paleontologic resources include grading to develop landfills and access roads, landfill operation, and removal of cover material. Such actions could disturb fossiliferous rocks, resulting in the loss of valuable scientific specimens and data; as well, land filling could preclude access for future study by paleontologists. The significance of potential impacts at a particular site would depend upon the nature, extent, and importance of the underlying sediments, as well as the type and intensity of the impact. Generally, there is a high potential for significant impacts to paleontologic resources in portions of Towsley

Canyon and along the access road corridor. These potential impacts, however, can be reduced to insignificance by implementing the mitigation measures identified below.

Mitigation Measures

Measures to mitigate any significant impacts identified are discussed below. Because subsurface resources may be encountered during development of the landfill project, precautionary measures are included to mitigate potential impacts.

Archaeology. As indicated above, development of the potential Towsley Canyon Landfill would not impact known archaeological resources. However, there are areas which are currently inaccessible by foot and certain archival sites which should be field checked. Generally, impacts on archaeological resources could be mitigated to insignificance by design and implementation of procedures to preserve and stabilize the resources, while maintaining their integrity of setting, or, where direct impacts are unavoidable, to recover an adequate sample of the jeopardized specimens and data, describe and analyze all findings, and publish the results. Specifically, if Towsley Canyon should be developed as a landfill site:

- Mid-slope rockshelters within the area of potential impact, currently inaccessible by foot (due to dense brush), would be examined for possible archaeological evidence prior to disturbance. If any such cultural evidence is found, measures would be designed and implemented to mitigate identifiable potential impacts.
- The two "archival sites" shown on historic maps should be field checked and, if appropriate, tested to determine the absence or presence and nature of subsurface remains. If either of these resources proves important, and if impacts are anticipated, a mitigation plan should be prepared and implemented by professional archaeologists in accordance with the recommendations detailed in Section 5 of the archaeological technical report.

However, the possibility exists that subsurface archaeological remains may come to light during site preparation or road construction in Towsley Canyon. In such an event, all earthmoving would cease immediately at the discovery site, and a professional archaeologist would be called in to evaluate the find. If the resource is deemed important (per the criteria set forth in the CEQA EIR Guidelines: Appendix K), procedures to mitigate the impact (e.g., preservation in place or recovery of specimens and data through excavation) would be designed and implemented.

Ethnography/Native American Issues. Since no ethnographic settlement, cemetery, or place of religious importance to Native Americans is known in Towsley Canyon, no impacts are expected and no mitigation measures are recommended. In the event that subsurface archaeological remains come to light during construction, however, local Indians would be consulted and invited to participate in decision making on the disposition of human remains and curation of artifacts.

Paleontology. Anticipated impacts on paleontologic resources in Towsley Canyon could be mitigated to insignificant levels through a program of monitoring, collection of specimens and data, analysis of findings, and publication of reports, all under supervision of a professional paleontologist.

Unavoidable Impacts

Unavoidable impacts are discussed below.

Archaeology. No unavoidable significant impacts on known archaeological resources are anticipated with development of the Towsley Canyon Landfill.

Ethnography/Native American Issues. No unavoidable significant impacts on known ethnographic resources or places of significance to Native Americans are anticipated with development of the Towsley Canyon Landfill.

Paleontology. Given the extent of fossiliferous sediments in Towsley Canyon, some impacts on paleontological resources would be unavoidable if the Towsley Canyon Landfill were to be developed. Such impacts could be mitigated to insignificant levels through a program of monitoring, collection of specimens and data, analysis of findings, and publication of reports, all under supervision of a professional paleontologist.

4.10.6 Mission-Rustic-Sullivan Canyons

The following subsections briefly describe the Mission-Rustic-Sullivan canyons study area; review archaeological, historic, ethnographic, and paleontologic investigations; summarize important findings; and recommend measures to mitigate possible impacts.

Setting

These canyons lie in the eastern Santa Monica Mountains, approximately 6 miles north of the coast. The lower (southern) portions of the canyons are at approximately 700 feet AMSL, and the upper northern canyon heads reach 1,950 feet elevation. The bedrock of this area consists principally of granitic and

igneous rocks and slate. In the western portion of the project area, along the boundary with Topanga State Park, are several prominent sandstone outcrops. The youthful (Pliocene-Pleistocene) Santa Monica Mountains are undergoing uplift and rapid erosion. These forces have combined to create a rough landscape dominated by narrow ridges, steep slopes, and V-shaped valleys. No permanent springs or streams are found in either Mission Canyon or Rustic-Sullivan canyons. These drainages are active only during winter and spring rains. The plant communities found in these canyons vary according to soils, exposure, slopes, and degree of recent disturbances. Dense sage and chaparral plant communities dominate the steep slopes and narrow ridges that make up much of these project sites, especially at the upper canyons. Protected parts of the lower canyon bottoms, with their deeper soils and higher moisture content, support modified oak woodlands and riparian communities.

Archaeology. Archaeological studies included: background research into local prehistoric and historical archaeology; records searches at the Regional Information Center of the California Archaeological Inventory in Los Angeles; examination of the National Register of Historic places, rosters of the State Historic Landmarks and Points of Historical Interest, and historic maps for possible reference to cultural sites in the study area; locality-specific ethnographic and historical research; and intensive field surveys by experienced professional archaeologists. The archaeologists surveyed transects, spaced approximately 33 feet apart, in accessible portions of the potential landfill site. Canyon bottoms, rock overhangs, and large boulders were searched most intensively for possible archaeological evidence. In some places, hazardous slopes and/or impenetrable brush precluded systematic coverage; consequently, not all locations were surveyed with the same intensity. No archaeological resources were found in the potential Mission-Rustic-Sullivan Landfill Complex area.

Ethnography/Native American Issues. Mission-Rustic-Sullivan Canyons lie within the traditional territory of the Gabrielino Indians. Ethnographic studies included background research, interviews of Indian consultants, and field visits with representatives of the Indian groups. Although these endeavors did not reveal knowledge of former Indian settlements in the study area, consultants were aware of local biotic resources that would have been valued by their ancestors.

Paleontology. Paleontologic studies involved background library research and examination of museum comparative collections, review of unpublished geologic maps and reports, field surveys, and evaluation of past and new discoveries. Nearly all of Rustic-Sullivan Canyons and much of Mission

Canyon are underlain by Santa Monica Slate, a formation of low paleontologic sensitivity. Fossiliferous sediments, respectively of moderate and high paleontologic sensitivity, occur at the western margin of the Rustic Canyon study area. Also of high sensitivity are Modelo Formation sediments at the northern end of Mission Canyon.

Impacts

Potential impacts of developing the Mission-Rustic-Sullivan Canyon Landfill Complex on the archaeological, ethnographic, and paleontological resources are discussed below.

Archaeology. Because no archaeological remains in Mission-Rustic-Sullivan Canyons were encountered in the course of background research or field surveys, no impacts on archaeological resources are expected to result from landfill development in this location.

Ethnography/Native American Issues. Indian consultants expressed concern generally about loss of natural and cultural resources that might attend any landfill development, and want to see such impacts avoided. The greatest concern was that graves not be disturbed. Nonetheless, no specific ethnographic resources (e.g., former settlements, cemeteries, gathering areas, or places of religious importance) were identified in the potential Mission-Rustic-Sullivan Canyons Landfill complex area and no impacts are anticipated.

Paleontology. Potential impacts on paleontologic resources include grading (site preparation), landfill operations, and removal of cover material. Such actions could disturb fossiliferous rocks, resulting in the loss of valuable scientific data and specimens. The significance of potential impacts would depend upon the nature, extent, and importance of the affected sediments, as well as the intensity of the disturbance. There is a high potential for significant impacts to paleontologic resources in northern Mission Canyon and along the western margin of the Rustic Canyon study area. However, these impacts can be mitigated to insignificance by implementation of measures discussed below.

Mitigation Measures

Measures to mitigate any significant impacts identified are discussed below. Because subsurface resources may be encountered during development of the landfill project, precautionary measures are included to mitigate potential impacts.

Archaeology. Although no impacts on archaeological resources are expected in the potential Mission-Rustic-Sullivan Canyons Landfill complex area, the possibility exists that subsurface archaeological remains may come to light during site preparation or road construction. In such an event, all earthmoving would cease immediately at the discovery site, and a professional archaeologist would be called in to evaluate the remains and their context. If the resource is deemed important (per the criteria set forth in the CEQA EIR Guidelines: Appendix K), procedures to mitigate the impact (e.g., preservation in place or recovery of specimens and data through excavation) would be designed and implemented.

Ethnography/Native American Issues. Since no ethnographic settlements, cemeteries, gathering areas, or other places important to Native Americans are known in the Mission-Rustic-Sullivan Canyons area, no impacts are anticipated, and no mitigation measures are recommended. In the event that subsurface archaeological remains come to light during construction, however, local Indians will be consulted and invited to participate in decision making regarding the disposition of human remains and curation of artifacts.

Paleontology. Potential impacts would be mitigated to insignificant levels through a program of monitoring, collection of specimens and data, analysis of findings, and publication of reports, all under supervision of a professional paleontologist.

Unavoidable Impacts

Unavoidable impacts are discussed below.

Archaeology. No unavoidable significant impacts on known archaeological resources would be anticipated if the potential Mission-Rustic-Sullivan Canyons Landfill complex, as presently envisioned, were to be developed.

Ethnography/Native American Issues. No unavoidable impacts on known ethnographic resources or places of significance to Native Americans are anticipated with development of the potential Mission-Rustic-Sullivan Canyons Landfill complex.

Paleontology. Given the extent of fossiliferous sediments in northern Mission Canyon and along the potential access route from Mission Canyon to Rustic-Sullivan Canyons, some impacts on paleontological resources would be unavoidable if the Mission-Rustic-Sullivan Canyons Landfill complex were to be developed. However, such impacts could be mitigated to insignificant levels.

4.10.7 Cumulative Impacts

Any loss of cultural resources and relevant data, particularly within the dwindling resource base of a rapidly expanding metropolitan region, would constitute a cumulative impact. Because each cultural resource is unique, any loss of specimens and data precludes knowledge about earlier peoples and cultures. Similarly, paleontologic resources are finite and nonrenewable. Hence, all impacts on these resources erode the data base of paleontology. However, the recommended measures for the recovery, analysis, and reporting of paleontologic and archaeological specimens and data would adequately mitigate anticipated impacts on known resources to a level of insignificance.

4.11 PUBLIC SERVICES AND UTILITIES

This section provides an evaluation of the public service and utility impacts associated with waste diversion and the potential landfill sites. Issues addressed include wastewater disposal; law enforcement; hospital and medical service; electricity, telephone service, and natural gas; fire protection; utility lines and easements; and water supply.

4.11.1 Waste Diversion

Significant diversion of a wide variety of materials from the waste stream and placement of those materials back into the cycle of manufacturing, sales, and consumption imply substantial increases in demand both upon the full range of public services and utilities functioning in the economy, and upon energy sources. To the extent that the recovered material is recycled by regional end users, this material may require expanding production or may simply replace virgin or imported recycled feedstock. The most significant impacts would be generated by expanding production. Replacing virgin feedstock may have both positive and negative impact potential. In those instances where the recovered material is exported out of the region to other domestic or foreign end users, downstream impacts would be precluded.

Impacts and Mitigation Measures

Impacts and mitigation measures associated with public services and utilities are discussed below. Because specific facility sitings are not included in this Program Environmental Impact Report (EIR), the discussion is necessarily general in nature.

Collection and Intermediate Handling. Substantial increases in material recycling can be expected to increase significantly the vehicle fuels (gasoline and diesel) consumed in the region in a wide variety of added vehicular uses including:

1. Separate collection of recyclables in community curbside collection programs; commercial collectors of paper, metals, and glass; and independent scavengers (commonly using small to medium size trucks).
2. Private citizen and scavenger delivery of materials to drop-off and buyback locations (commonly using autos, pickup trucks, and vans).

3. Delivery of processed materials to end users or to the dock for export (commonly using 18-wheeler truck and trailers).

Additional materials processing would increase energy demand. Balers and shredders/grinders are heavy power consumers. For example, one 500-horsepower (hp) woodwaste shredder would require approximately 26 kilowatt-hours (kWh) of electricity per ton.¹⁰⁶

Unauthorized scavenging from community and commercial collection programs of recyclables can severely impact program economics. A popular response to this problem is the enactment of antiscavenging ordinances. For these to work, vigorous enforcement is desirable. The result could be increased demands on local law enforcement agencies.

Ultimate Processing. Of the major regional material end-using industries, paper mills and cullet (glass) processors are substantial generators of wastewater effluents. Although impacts can be mitigated somewhat even with internal water recycling systems, wastewater is eventually discharged to the sewer system. Based on recent industry data, the maximum quantity of wastewater generated is approximately 2,300 gallons per ton of recycled paper (input). Estimates of paper recycling by the year 2000 of 4,600 tons per day (TPD) over existing levels, could lead to a regional impact on the wastewater collection and treatment system (sewerage system) of 10.5 million gallons of additional wastewater per day.

Additional processing of recycled glass could also impact the sewerage system. Recent industry data indicate that the maximum quantity of wastewater generated is approximately 1,900 gallons per ton of recycled glass. Based on estimates of glass recycling by the year 2000 of 2,300 TPD over existing levels, the regional impact on the wastewater system will be approximately 4.4 million gallons per day (mgd). Therefore, any substantial regional paper mill or cullet process expansion or new development may have an impact on wastewater collection and treatment facilities. However, this impact is not expected to be significant amounting to approximately a 1 percent increase in projected wastewater quantities for the year 2000. These issues would be thoroughly examined and evaluated during the environmental review process for such expansion/development.

Issues related to energy resource demands are also associated with end use as follows:

Aluminum. Regional aluminum smelters, using recycled cans, will require approximately 5,000 Btu's of energy

per pound processed. This translates to 2,930 kWh of electricity per ton or nearly two barrels of oil equivalent.^{107,108} Much of the aluminum recovery, however, is exported out of the region for smelting. The exported aluminum, therefore, will have minimal impact on energy demands.

Glass. The use of each pound of cullet replacing raw materials will reduce the need for energy from 7,800 Btu's to 7,200 Btu's or a savings of about 350 kWh of electricity (or its equivalent) per ton.¹⁰⁷

Newspaper. Planned increases in mill capacity in the region for production of newspaper using ONP as furnish will require in the order of 17,000 cubic feet (cf) of natural gas and 625 kWh of electricity.¹⁰⁹

Corrugated Boxes and Other Paper Grades. With no planned increases in capacity in the region, increased recycling of these grades will result either in export from the region (both foreign and domestic) or displacement of tonnage currently originating elsewhere. Therefore, power and water demands are not likely to be significantly impacted.

Ferrous. Essentially all the ferrous scrap recovered is exported out of the region to both domestic and foreign mills.

Woodwaste. To the extent that woodwaste is marketed as a biofuel, the material will all be exported out of the region to other parts of California.

Unavoidable Impacts. Substantial increases in waste diversion would result in significant increases in vehicle fuel use during collection and processing of the materials and in corresponding increases in air emissions. For the end user, certain waste streams would increase substantially as would certain resource demands.

4.11.2 Issues Common to All Landfills

Many of the public service and utility issues are common to all the potential landfill sites. These include wastewater disposal; law enforcement, hospital and medical service; and electricity, telephone service, and natural gas. The potential Mission-Rustic-Sullivan Landfill Complex is the only site which has pipelines and utilities potentially affected by landfill development, so this issue is discussed separately in Section 4.11.5.

Wastewater Disposal

Various types of wastewater would be generated at the potential landfills. These would include sanitary wastewater generated primarily by landfill employees and condensate from the landfill gas recovery system. Other potential wastewaters discussed below include leachate and canyon waters.

Setting. Collection, treatment, and disposal of wastewater for the potential Blind and Mission-Rustic-Sullivan Canyon Landfills would be provided by the City of Los Angeles Department of Public Works, Bureau of Sanitation. Wastewater from these landfill sites would be discharged to the City's Hyperion Wastewater Treatment Plant in El Segundo. The Los Angeles County Sanitation District (Sanitation District Nos. 26 and 32) provides wastewater service in the Santa Clarita area at the Valencia and Saugus Wastewater Reclamation Plants and would serve the potential Towsley Canyon Landfill site. Potential discharges from a landfill that would be characterized as industrial in nature would have to meet the requirements of the City's Bureau of Sanitation or the Sanitation Districts. Industrial waste pollutant limitations that would be imposed by these agencies are summarized in Table 4.11-1.

On-site septic tank systems would be used to accommodate sanitary wastewater generated by landfill employees or patrons. Appropriate soil investigations would be conducted to assure that City or County requirements for septic tank systems can be met.

Impacts. The Sanitation Districts would provide the necessary on-site containment of wastewater flows or provide the necessary on-site treatment prior to off-site disposal. This would assure that on-site wastewaters would not cause any water quality or health related impacts.

As indicated in Chapter 3, condensate would be produced from the landfill gas recovery system. To mitigate potential impacts, condensate would be collected on site and treated through an air stripper system with the exhaust gas disposed of at the flaring station to remove contaminants. Following treatment, condensate would be used on site for dust control purposes and thereby reduce the needed water supply.

The potential for leachate production is remote given the planned method of operation, exclusion of liquid wastes from the filling operation, and the low precipitation rates. If leachate is produced, it would be collected as described in Chapter 3 and given appropriate treatment prior to disposal. Disposal would consist of piping the treated leachate to a suitable location and connecting to the existing sewerage

Table 4.11-1 Summary of Industrial Waste Pollutant Limitations

Pollutant	City of L.A.	Sanitation Districts
Arsenic	3.0	3.0
Cadmium	15	0.69
Chromium (total)	-	2.77
Copper	15	3.38
Cyanide (free)	2	-
Cyanide (total)	10	1.20
Dissolved sulfides	0.1	0.1
Lead	5	0.69
Mercury	-	2.0
Nickel	12	3.98
pH	5.5-11.0	-
Silver	5	0.43
Zinc	25	2.61
Total toxic organics	-	1.0 ^a
Dispersed oil and grease	600	-
Floatable oil and grease	- ^b	-
Temperature, degrees F	140	-

^aPer EPA Test Methods 601 and 602 (volatile organics) and Test Method 625 (acid extractables, base/neutral extractables, and pesticides).

^bNone visible.

Source: The Sanitation Districts and City of L.A. Industrial Waste Control Ordinance

system or trucking the treated leachate to suitable discharge locations as deemed appropriate by the City of Los Angeles or Sanitation Districts.

Canyon waters are localized waters which could underlie each landfill's liner system. Because of the extensive liner system that would be employed at each landfill site, there would be no reason to expect any degradation of canyon waters from landfill operation. Accordingly, under requirements issued by the Regional Water Quality Control Board (RWQCB), canyon waters could be discharged to existing surface drainage courses.

Mitigation Measures. Water quality and any health related impacts would be reduced to insignificance by properly managing all wastewater streams generated at each potential landfill site. If off-site discharge of wastewater is anticipated, prior treatment would assure that appropriate requirements of the wastewater jurisdiction are met. Treated condensate would be used on site for dust control. This has water conservation benefits as discussed in the following section on water supply.

Unavoidable Impacts. None.

Law Enforcement

Law enforcement for the Blind and Towsley Canyon Landfill sites would be provided by the Los Angeles County Sheriff's Department and the California Highway Patrol (CHP). Additionally, the Ventura County Sheriff's Department could exercise authority over portions of Blind Canyon. The City of Los Angeles West Los Angeles Police Station provides law enforcement services for the Mission-Rustic-Sullivan canyon area. These agencies are primarily concerned with overweight vehicles and littering of roadways, which is an aesthetic issue and discussed in Section 4.8.

Setting. County Sheriff Departments are responsible for prevention and investigation of criminal behavior (other than vehicular). The CHP is responsible for all traffic and vehicle code enforcement in the unincorporated area, including County roads. The Santa Clarita Sheriff's Station in Valencia serves Towsley Canyon with a response time of 1 to 6 minutes depending on location of patrol cars. Blind Canyon is served by the Malibu Sheriff's Station approximately 25 miles distant with a response time of 30 minutes. In July of 1990, the Lost Hills Station will be established about 15 miles away and have a

20-minute response time. Forty deputies will work out of this station. Response time to the Mission-Rustic-Sullivan Canyon area would vary depending on the time of day and location and type of call.

Impacts. Landfills do not represent a significant source of criminal activity, so the proposed landfills would have an insignificant impact on the workload of local law enforcement authorities. The CHP is active in traffic and vehicle code enforcement relative to existing landfills in Ventura and Los Angeles Counties. Citations are often issued for uncovered or inadequately covered loads being hauled by the public and by overweight commercial hauling vehicles. Overweight citations can be extremely expensive. The CHP regularly monitors access roads to existing landfills through use of portable scales. It is anticipated that the potential landfill sites would represent a minor additional burden to the CHP and would not represent a significant impact.

Mitigation Measures. None required.

Unavoidable Impacts. None.

Hospital and Medical Service

Setting. Several hospitals are located in the vicinity of the potential Blind and Towsley Canyon Landfill sites. North Ridge Hospital in Pacoima serves the Blind Canyon area with paramedic service. Holy Cross Hospital is located in Mission Hills, and Nu-Med Regional Hospital is located in Canoga Park. Henry Mayo Hospital in Valencia with 133 beds serves the Towsley Canyon area, which is about 4 miles distant. There are several hospitals in the vicinity of the potential Mission-Rustic-Sullivan Landfill Complex, some of which are emergency care capabilities. Three other hospitals are within 5 miles driving distance of the landfill site.

Impacts. There are sources of personal injury at a landfill including solid waste material, general traffic large trucks, bulldozers, or compactor tractors. While infrequent use of the local hospitals and paramedic services for accident victims would continue throughout the life of the landfill, no significant increase in use of hospitals or medical services is anticipated. Mitigation measures to reduce the risk of landfill patron and employee injury are discussed in Section 4.9 under public health and safety.

Mitigation Measures. No mitigation measures would be required. However, the Sanitation Districts do employ a safety engineer to inspect field activities and to make recommendations on safety measures. These measures would serve to limit

the number of accidents at the landfill. The site would be inspected periodically pursuant to the Occupational Safety and Health Act to ensure compliance with all applicable safety regulations. Additionally, "tailgate" safety meetings would be regularly conducted at the site for all employees. At these meetings, important safety information would be discussed in addition to possible changes in operating procedures to encourage safety. All site supervisors and their assistants receive first aid instruction and have valid Red Cross certificates. First aid materials would be kept at several locations on the site and in several of the vehicles for minor medical treatment. Emergency medical assistance could be obtained in an expeditious manner if needed.

Unavoidable Impacts. None.

Electricity, Telephone, and Natural Gas

As for any development, potential landfill sites would require certain basic utilities for daily operation. These utilities include electricity, telephone, and natural gas.

Setting. Electrical power for the Mission-Rustic-Sullivan Canyon area is provided by the Los Angeles Department of Water and Power (LADWP), while the Southern California Edison (SCE) Company would provide power to the Blind and Towsley Canyon areas. Electrical power would be used for office buildings, truck scales, air conditioning, radio communication system, and other miscellaneous items. If a gas-to-energy station is used in the future to convert landfill gas to electrical energy, then landfill needs would be met and excess electricity would need to be sold to the LADWP or SCE each month.

Telephone service in the areas surrounding the potential landfills is provided by General Telephone Company. Natural gas is provided by the Southern California Gas Company. Natural gas would be used to heat water for employee showers.

Impacts. Provision of basic utilities for landfill operation would not result in significant adverse impacts.

Mitigation Measures. None required.

Unavoidable Impacts. None.

Fire Protection

Fire protection for the potential Mission-Rustic-Sullivan Canyon Landfill Complex would be provided by the City of Los Angeles Fire Department. Fire protection for the potential Towsley Canyon Landfill would be provided by the Consolidated

Fire Protection District of Los Angeles County and, additionally for Blind Canyon, the Ventura County Fire Protection District. Section 4.9 of this EIR discusses the potential fire hazard of the landfill sites and includes a further discussion of these fire departments.

Setting. Engine Company Number 75 in Chatsworth serves the Blind Canyon area with a 25-minute response time. Station Number 73, approximately 5 miles away with a response time of 7 minutes, serves Towsley Canyon. Station Number 111 located in Santa Clarita could supply paramedics, if needed, in approximately 15 minutes. The City of Los Angeles Fire Department has an existing fire station at 16500 Mulholland Drive, about 2 miles from the Mission-Rustic-Sullivan Landfill Complex site. This single-engine station has a staff of four firemen.

Impacts. The basic characteristics of landfill development and operation (i.e., excavation, fill and cover, landfill gas control system, presence of earth moving equipment, and water supply) are important safeguards in minimizing fire hazards. In this way, each site would act effectively as a fire break. As indicated in Section 4.9, the Sanitation Districts would comply with all applicable code and ordinance requirements of City and County Fire Departments for construction, access, water mains, fire flows, and fire hydrants. Development of either the Blind, Towsley, or Mission-Rustic-Sullivan Canyon Landfill sites should not create an additional need for equipment or manpower. However, improved access to the landfill sites could be necessary. Potential impacts are not considered significant.

Mitigation Measures. No mitigation measures are required. Implementation of the measures identified in Section 4.9 would mitigate fire hazard impacts, thereby minimizing any additional burden on the resources of the local fire departments.

Unavoidable Impacts. None.

Regional Water Supply Setting

A very sophisticated distribution network is in place to supply the many customers in Southern California with water imported from northern California via the State Water Project (SWP) or the Colorado River Aqueduct.

The SWP has transported water through 500 miles of water delivery canals, pipelines, and tunnels since the early 1960s. The SWP is contracted to eventually supply a total of 4.2 million acre-feet (MAF) per year.⁶⁵

Most of this water originates from the watershed of the Bay-Delta Estuary in Northern California. As the years pass and more water is diverted, evidence mounts as to the decline of biological resources in the system. Water quality is decreasing, and salinity in the estuarine system is on the increase with consequent impacts on the biota. Consequently, even the existing diversions are under question and are subject to review by the State Water Resources Control Board.

The Metropolitan Water District (MWD) of Southern California is the wholesale distributor of SWP water and Colorado River water and serves most of metropolitan Southern California, including the City of Los Angeles. The City of Los Angeles Department of Water and Power (LADWP) purchases water from MWD to supplement its supplies from local wells and the Los Angeles aqueducts, which deliver water from the Owens Valley on the eastern slope of the Sierra Nevada and from Mono Basin.

A total of 27 water agencies are members of MWD, including the City of Los Angeles. MWD was formed in 1928 by Los Angeles and ten other cities for the purpose of developing a water supply from the Colorado River to meet the growing demand for water in Southern California. The Colorado River Aqueduct was completed by MWD in 1941. In 1960, in anticipation of continued growth in Southern California, MWD contracted with the state for entitlement to water from the new SWP. Today, MWD operates the Colorado River Aqueduct, storage and treatment facilities for water from the Colorado Aqueduct and SWP, and distribution facilities for conveyance of these waters to MWD member agencies.

The potable water needs at the sites are relatively small, amounting to less than 2,000 gallons per day per site (1.7 acre-feet/year (AF/yr)). The nonpotable water needs (for landscape irrigation and dust control) are considered greater. Total water needs could amount to approximately 1.6 million gallons per day (mgd) (2,037 AF/yr) depending on the type of vegetation used on completed landfill slopes. The first priority for meeting nonpotable water needs would be through the use of reclaimed water from wastewater treatment plants.

The use of reclaimed water for nonpotable uses such as dust control would be regulated by the State Department of Health Services (DHS) through water reclamation requirements issued by the RWQCB, Los Angeles Region. Requirements of the DHS are contained in CCR, Title 22, Division 4, Environmental Health. These requirements stipulate the degree of wastewater treatment relative to the degree of public exposure to the reclaimed water. Guidelines for on-site management practices to assure

safe use of reclaimed water are also available and would be imposed by DHS. Because reclaimed water would receive advanced treatment and because DHS requirements would be followed, the reclaimed water would be suitable for use at the potential Towsley Canyon Landfill without significant adverse public health impacts.

Reclaimed wastewater also could be used for landscape irrigation. Reclaimed water of similar quality has been used continuously for years by the Sanitation Districts on golf courses and ornamental landscaping with no adverse impacts.

4.11.3 Blind Canyon

Water supply impacts associated with development of the potential Blind Canyon Landfill site are discussed below.

Water Supply

Water supply is an issue associated with the potential Blind Canyon Landfill site. Portions of the landfill project boundary as well as the access road are in Ventura County.

Setting. There are three MWD member agencies which supply water in the vicinity of the potential Blind Canyon Landfill site. These agencies include the LADWP whose service area is coterminous with the City limits which borders a portion of Highway 118 to the south of the landfill site; the Las Virgenes Municipal Water District (LVMWD) whose service area includes a portion of the proposed Blind Canyon access road; and the Calleguas Municipal Water District which supplies water to local water purveyors in Ventura County including the Southern California Water Company and Water Works District No. 8. While the service areas of these agencies are reasonably close to the landfill site, the LVMWD is the closest with pipelines and water storage tanks in the immediate area.

Headquartered in Calabasas, LVMWD was formed in 1958 to provide an imported water supply to the area, and joined MWD in 1960. LVMWD is an independent special district of the State and currently imports and distributes domestic water; collects and reclaims wastewater; and distributes reclaimed wastewater for irrigation. Potable water use within the district is currently about 15,000 AF/yr and an additional 6,000 to 7,000 AF/yr of reclaimed water is supplied to local customers for nonpotable uses.⁸⁹ The LVMWD currently does not have a formal water allocation from MWD. Deliveries by MWD are based on an annual assessment of needs by the LVMWD.⁶⁶

Impacts. In order to obtain water service from the LVMWD, the potential Blind Canyon Landfill site would need to be annexed by the LVMWD. Provision of service would require improvement to existing LVMWD facilities to convey the water to the landfill site. Engineering services and the cost for improvements would be borne by the Sanitation Districts.

Water supply requirements for the potential Blind Canyon Landfill site would be for irrigation, dust control and potable (drinking) uses. Projected water demands, based on water supply requirements at existing landfills would be as follows:

	Water use for 16,500-TPD facility
Irrigation	51,000 gpd - 1.22 mgd ^a
Dust control	235,000 gpd
Potable	<u>1,800 gpd</u>
Total	287,800 gpd - 1.46 mgd

^aThe irrigation water requirement is dependent on the type of vegetation used on the front face slope and top deck area and is not sensitive to daily waste inflow. The lower quantity of irrigation water would be required for drought tolerant vegetation, while the higher quantity represents the irrigation water needs of ornamental vegetation.

As can be seen, while potable needs are small, requirements for irrigation and dust control could be up to 1.46 mgd. On an annual basis, the total water supply requirements are equivalent to 1,860 AF.

To assess potential water supply impacts requires a regional examination of the water supply and demand situation. This is shown in Table 4.11-2, which summarizes available water supplies for MWD under years of average rainfall. As can be seen from the table, without any further efforts to increase existing supplies, potential shortages would not occur until the year 2000. However, water supply impacts could be significant if reclaimed water supplies are not available. Potential cumulative impacts are discussed later in this section.

Mitigation Measures. The Sanitation Districts would undertake a series of water conservation measures to reduce water needs. The use of water for dust control would be limited to that necessary to protect the area's air quality and

**Table 4.11-2 Summary of Available Water Supplies During
Average Rainfall Years for MWD**

	Millions of acre-feet		
	1990	1995	2000
A. Existing supplies			
1. Local production ^a	1.23	1.26	1.26
2. L.A. aqueducts ^b	0.47	0.47	0.47
3. Colorado River ^c	0.47	0.47	0.47
4. State water project ^c	1.33	1.51	1.53
	<u>3.50</u>	<u>3.71</u>	<u>3.73</u>
Normal projection of demand ^d	3.50	3.71	3.92
Potential shortage ^e	0.00	0.00	(0.19)
B. Probable increase in supplies			
1. MWD local projects program	0.01	0.04	0.06
2. Groundwater management programs ^f	0.00	0.00	0.00
3. Additional Colorado River water	0.53	0.25	0.25
4. Additional state project water	0.00	0.25	0.25
Total	<u>0.54</u>	<u>0.54</u>	<u>0.56</u>
Water available for storage with potential supplies	0.54	0.54	0.37

^aSources include local surface and groundwater supplies and MWD sponsored wastewater reuse.

^bSources available solely to City of Los Angeles.

^cSources available to the MWD, State Water Project supply limited by East Branch aqueduct capacity in 1990.

^dDemands may be lower during severe droughts due to implementation of short-term water conservation measures and increased public awareness; demands could be greater in years of below-normal local rainfall and higher temperatures.

^eShortages under 1928-34 dry period and 1976-77 drought conditions could be reduced by implementation of water management measures, including possible exchanges and transfers to meet the District's requirements.

^fThese programs would be called upon as required to reduce potential shortages.

Source: Metropolitan Water District

minimize nuisance. To the extent possible, the vegetation planted on the completed landfill would be of species able to survive with minimal amounts of moisture. This would reduce the projected irrigation water requirement which is based on higher water use vegetation at the Puente Hills Landfill.

Condensate, produced from the landfill gas recovery system, would be collected and given appropriate treatment so that it could be reused on site for dust control.

The use of reclaimed municipal wastewater in place of potable water for irrigation and dust control purposes could be a significant water conservation measure.

Unavoidable Impacts. Contribution to decreases in local water supply if reclaimed water supplies are not available.

4.11.4 Towsley Canyon

Water supply impacts associated with development of the potential Towsley Canyon Landfill site are discussed below.

Water Supply

There is similarity between the Towsley and Blind Canyon Landfill sites in this regard because both are located in the unincorporated area of Los Angeles County and water from the SWP and Colorado River are the predominant sources of water in both areas.

Setting. The Sanitation Districts' first priority would be to utilize reclaimed wastewater for all nonpotable water needs at the potential Towsley Canyon Landfill. Geohydrologic investigations necessary to evaluate the underlying formations to determine the availability of on-site sources of groundwater would be conducted at a later time. This section describes the local water supply setting in the Towsley Canyon area and identifies a water purveyor which would appear to be the most likely provider of potable water.

In the Santa Clarita Valley, water supplies are provided by four major retail domestic water purveyors and a wholesale agency which imports and distributes SWP water. A small portion of the water supply is supplied by individual wells and several small community systems. The major purveyors are Los Angeles County Water Works District No. 36, Val Verde; Newhall County Water District; Santa Clarita Water Company; and Valencia Water Company. The wholesale agency is Castaic Lake Water Agency. Under terms of its contract with the State of California, Castaic Lake Water Agency's entitlement to SWP water increases to 41,500 AF/yr beginning in 1991.⁵⁸

The potential Towsley Canyon Landfill site is not within the service area boundaries of any of the water purveyors described above. It is closest to the Valencia Water Company to the north and the Newhall County Water District to the west. In general, available water supplies in the Santa Clarita Valley will not be adequate to meet projected demands beginning around the year 2000.⁵⁹ Projections for the year 2010 indicate a water supply-to-demand shortage of between 20,000 and 38,000 AF, depending on certain SWP water entitlements and on whether a reclamation program in the Santa Clarita Valley is implemented. Because of the pending shortage, and because of many prior commitments, the Valencia Water Company maintains a policy of not extending their existing service area boundary.⁶⁰ The Newhall County Water District would be the only remaining "off-site" source of water for the potential Towsley Canyon Landfill site.

The Newhall County Water District consists of three operating subareas: Castaic, Pinetree, and Newhall. Water for Castaic and Pinetree service areas is obtained either from alluvial wells or is imported SWP water from the Castaic Lake Water Agency. Water for the Newhall service area, however, is obtained totally via wells which tap the Saugus Formation. The Newhall Service Area is the closest to the Towsley Canyon site with the present service area being near where the landfill access road would depart from Interstate 5. The Newhall County Water District maintains a policy of providing service to those who request it.⁶²

Impacts. As indicated above and discussed in the subsection on mitigation measures below, the Sanitation Districts would propose to utilize reclaimed wastewater as a first priority for nonpotable water uses. If water service from the Newhall County Water District's Newhall service area was needed, the potential Towsley Canyon Landfill would need to be annexed by the district. As for the potential Blind Canyon Landfill site, provision of service would require improvements to existing district facilities to convey the water to the landfill site. Engineering services and the cost for improvements would be borne by Sanitation Districts.

Water supply requirements for the potential Towsley Canyon Landfill site would exist for irrigation, dust control, and potable (drinking) uses. Projected demands for two sized facilities, based on water supply requirements at existing the Sanitation Districts Scholl Canyon and Puente Hills landfills, are as follows:

	Water use for 16,500-TPD facility
Irrigation	128,500 gpd - 1.62 mgd ^a
Dust control	235,000 gpd
Potable	<u>1,800 gpd</u>
Total	365,300 gpd - 1.85 mgd

^aThe irrigation water requirement is dependent on the front face slope and top deck area and is not sensitive to daily waste inflow. The lower quantity of irrigation water would be required for drought tolerant vegetation, while the higher quantity represents the irrigation water needs of ornamental vegetation.

As can be seen, while potable water needs are small, requirements for irrigation and dust control could be up to 1.85 mgd. On an annual basis, the total water supply requirements are equivalent to 2,038 AF.

The Newhall County Water District (NCWD) has experienced a relatively steady growth and anticipates this to continue. The NCWD is adding a new well to its Newhall system and in 1990 will have a local groundwater production capability of about 8,000 AF/yr.⁶¹ In 1993, the year estimated that the Towsley Canyon Landfill site would become operational, the annual water demand in the Newhall service area is estimated to be about 4,300 AF.⁶⁴ Adequate water supply would exist for the Towsley Canyon Landfill, and no significant adverse impacts would result, assuming reclaimed water sources would be available.

Mitigation Measures. The use of water for dust control would be limited to that necessary to protect the area's air quality and minimize nuisance. To the extent possible, the vegetation planted on the completed landfill would be of species able to survive with minimal amounts of moisture. This would reduce the projected irrigation water requirement which is based on higher water use vegetation at Puente Hills Landfill.

Condensate, produced from the landfill gas recovery system, would be collected and given appropriate treatment on site. This water would then be used for on-site dust control.

The use of reclaimed municipal wastewater in place of potable water for irrigation and dust control purposes could be a significant water conservation measure. The Castaic Lake Water Agency, in cooperation with the Sanitation Districts, is currently preparing a Master Plan for water reclamation in the

Santa Clarita Valley, primarily for landscape irrigation uses. Two wastewater treatment plants (the Saugus Plant with 5.5-mgd capacity and the Valencia Plant with 13-mgd capacity by 1993) currently discharge into the Santa Clara River and are considered potential sources for this resource. Both plants are owned and operated as provided for in a Joint Powers Agreement between the Sanitation Districts Nos. 26 and 32.

Unavoidable Impacts. Contribution to decreases in local water supply if reclaimed water supplies are not available.

4.11.5 Mission-Rustic-Sullivan Canyon

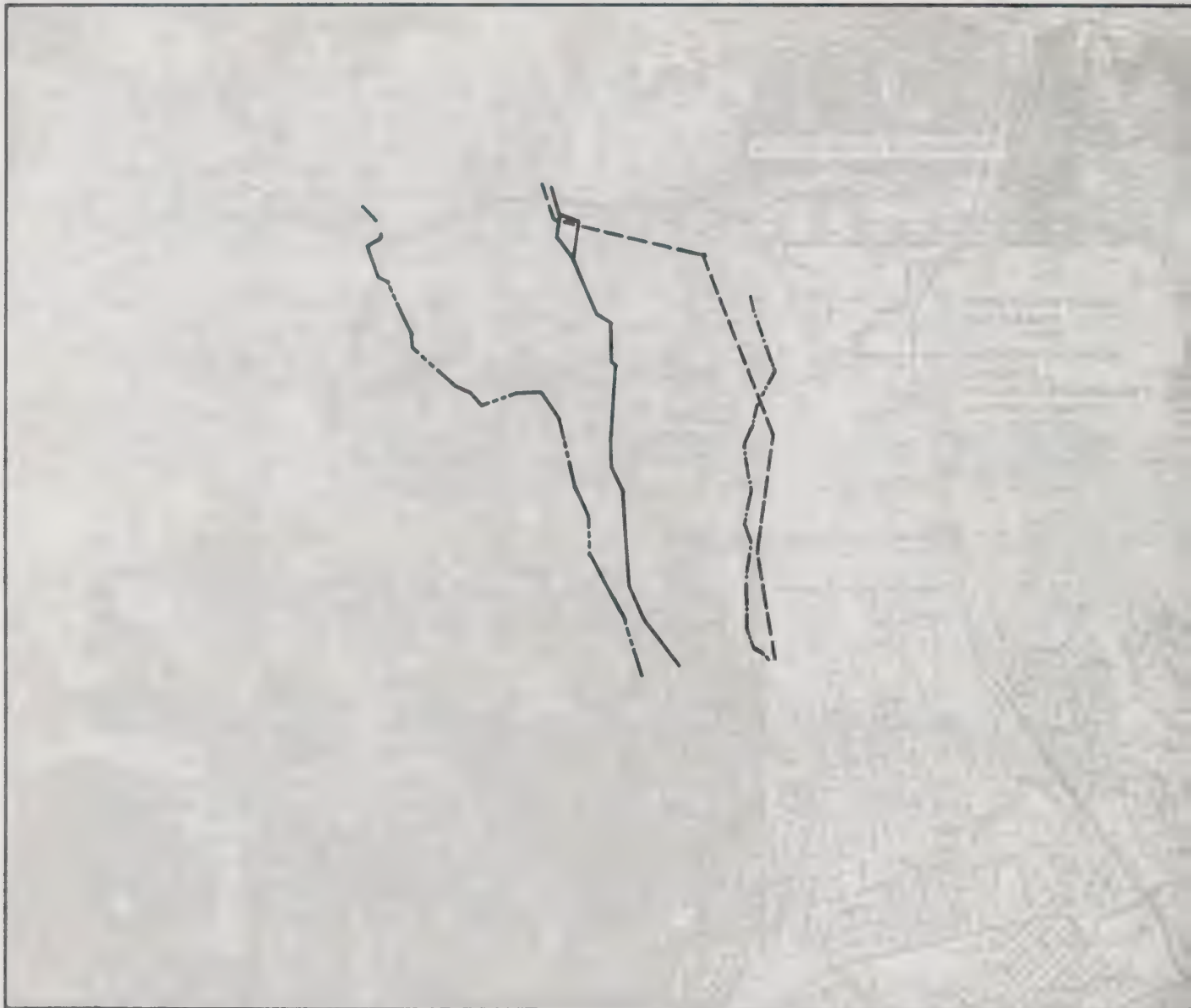
Utility line and easement and water supply impacts associated with development of the potential Mission-Rustic-Sullivan Landfill Complex are discussed below.

Utility Lines and Easements

The Mission-Rustic-Sullivan Canyon Landfill Complex is the only potential landfill site which contains utility lines and associated easements.

Setting. Figure 4.11-1 shows the location of utility lines in the immediate vicinity of the Mission-Rustic-Sullivan Canyon Landfill Complex. These lines include the following:

- Gas Transmission Lines. 30- and a 34-inch pressurized gas supply lines of Southern California Gas (SCG) run in a north-south direction through Rustic-Sullivan Canyon. These lines are buried generally 3 feet deep and would be directly impacted by development of Rustic-Sullivan Canyon as a landfill.
- Electrical Transmission Lines. LADWP's Tarzana-Olympic Electrical Transmission Lines 1 (138 kilovolt) and 3 (230 kilovolt) cross the extreme northern portion of Rustic-Sullivan Canyon. These lines transmit power from LADWP's Scaddergood 550-megawatt generator station for use in their service area.
- Water Line. LADWP has a 12-inch water supply line along Mandeville Canyon Road which provides service to that area.
- Oil Line. Shell Oil has a 10-inch buried crude oil line which lies within the Rustic-Sullivan Canyon boundary, but does not conflict with the final landfill footprint. Oil is transmitted in this line from oil leases in Ventura County to Shell's Wilmington Refinery.



0 2000 4000
SCALE IN FEET
(APPROXIMATE)

Source:

Southern California Gas, Los Angeles Department
of Water and Power, Shell Oil.

LEGEND:

- GAS TRANSMISSION LINES – 30" AND 34"
(SOUTHERN CALIFORNIA GAS)
APPROXIMATE LOCATION
- - - - - ELECTRICAL TRANSMISSION LINE
(LOS ANGELES DEPARTMENT OF WATER
AND POWER) APPROXIMATE LOCATION
- . - . - 12" WATER LINE (LOS ANGELES
DEPARTMENT OF WATER AND POWER)
APPROXIMATE LOCATION
- - - - - 10" CRUDE OIL LINE (SHELL PIPELINE)
APPROXIMATE LOCATION

Figure 4.11-1 Utility Lines on the Mission-Rustic-Sullivan Canyons Project Site and Vicinity

Impacts. Development of the Mission-Rustic-Sullivan Canyon Landfill Complex would not impact LADWP's water line or Shell Oil's oil line. Sufficient distance would be maintained between the oil line (Shell Oil has a 25- to 50-foot right-of-way) and the final fill to avoid direct impacts.

Development of the Rustic-Sullivan Canyon site would impact two electrical transmission towers of LADWP. This would necessitate their relocation.

Development of the Rustic-Sullivan Canyon site would also directly impact SCG's gas transmission lines. Because these lines are only 3 feet beneath the surface and cannot be buried under refuse, they would have to be relocated if the site were to be developed as a landfill.

Mitigation Measures. As indicated above, two electrical transmission towers would need to be relocated. LADWP does have a formal procedure that would involve technical and environmental feasibility studies and public hearings prior to a formal decision. The costs for this process would be borne by the Sanitation Districts.

SCG's gas transmission lines would also be relocated. Such relocation would be subject to considerable expense and specific procedural requirements of SCG.

Unavoidable Impacts. None.

Water Supply

Setting. The Sanitation Districts' first priority would be to utilize reclaimed wastewater for all nonpotable water needs at the potential Mission-Rustic-Sullivan Landfill Complex. Geohydrologic investigations necessary to evaluate the underlying formations to determine the availability of on-site sources of groundwater would be conducted at a later time. This section describes the local water supply setting. The LADWP would be the potable water purveyor.

As discussed in Section 4.11.2, the LADWP is a member agency of MWD where a portion of their water supply is obtained. LADWP also obtains water from local wells, the Los Angeles Aqueducts which convey water from the Owens Valley and the Mono Basin, and the reclamation of wastewater. The supply available from local wells and from the aqueducts is fixed and will not increase in the future. The majority of all future increases in demand must, therefore, be met through purchases from MWD. Additional use of reclaimed water will meet only a small portion of the increased demand.

Impacts. Provision of service from the LADWP would require improvements to existing facilities to convey the water. This would be primarily associated with the Rustic-Sullivan Canyon area; water service is already available in the Mission Canyon area because of previous filling operations at the site. Engineering services and the cost for improvements would be borne by the Sanitation Districts.

Water supply requirements for the potential Mission-Rustic-Sullivan Landfill Complex site exist for irrigation, dust control, and potable (drinking) uses. Projected demands are as follows:

	Water use for 16,500-TPD facility
Irrigation	30,500 gpd - 1.49 mgd ^a
Dust control	235,000 mgd
Potable	<u>1,800 gpd</u>
Total	267,300 gpd - 1.72 mgd

^aThe irrigation water requirement is dependent on the front face slope area and top deck area and is not sensitive to daily waste inflow. The lower quantity of irrigation water would be required for drought tolerant vegetation, while the higher quantity represents the irrigation water needs of ornamental vegetation.

As can be seen, while potable water needs are small, requirements for irrigation and dust control could be up to 1.72 mgd. On an annual basis, the total water supply requirements are equivalent to 1,893 AF.

To assess potential water supply impacts requires a regional examination of the water supply and demand situation. This is shown in Table 4.11-2, which summarizes available water supplies for MWD under years of average rainfall. As can be seen from the table, without any further efforts to increase existing supplies, potential shortages would not occur until the year 2000. However, water supply impacts could be significant if reclaimed water is not available.

Mitigation Measures. The Sanitation Districts would undertake a series of water conservation measures to reduce water needs. The use of water for dust control would be limited to that necessary to protect the area's air quality and minimize nuisance. To the extent possible, the vegetation

planted on the completed landfill would be of species able to survive with minimal amounts of moisture. This would reduce the projected water requirements.

Condensate, produced from the landfill gas recovery system, would be collected and given appropriate treatment on site. This water would then be used for on-site dust control.

The use of reclaimed municipal wastewater in place of potable water for irrigation and dust control purposes could be a significant water conservation measure. Such use would be implemented if available in the future.

Unavoidable Impacts. Contribution to decreases in local water supply if reclaimed water supplies are not available.

4.11.6 Cumulative Impacts Assessment

Simultaneous operation of two or more of the potential landfills could result in regional decreases in water supplies if reclaimed water is not available for use.



CHAPTER 5

Alternatives

CHAPTER 5

ALTERNATIVES

The purpose of this chapter is to examine a range of reasonable alternatives to the proposed Integrated Solid Waste Management System (Integrated System) components. As discussed in Chapter 3, the objective of the Integrated System is the incorporation of specified waste management components which together avert the solid waste management crisis and further the goals of the Action Plan. The No Program Alternative is discussed first along with potential environmental impacts. This is followed by a discussion of alternative landfill sites and waste management technologies as alternative project components. Although none of the alternatives which follow can fully replace the Integrated System in meeting the objective above, each alternative may be able to meet a portion of the county's or a city's waste management needs with varying degrees of feasibility.

5.1 THE NO PROGRAM ALTERNATIVE

The proposed program is an integrated system, consisting of waste diversion, expansion of existing landfills, and siting of new landfills, which prevents a waste management capacity shortfall during a 20-year planning period. Certain individual elements of the Integrated System will be pursued independent of this process and no guarantee of implementation for those elements exists. For example, AB 939 mandates that cities and counties prepare plans to divert 50 percent of the waste stream by the year 2000 but the feasibility of reaching the goal has not yet been determined. Also, as permitting for site expansions is undertaken by respective proponents independent of this Program Environmental Impact Report (EIR), one or more expansions may be denied or daily tonnage limitations or total fill capacities imposed in the new permits. Since no certainty exists as to which programs for waste diversion and additional landfill capacity will be implemented, or to what extent these programs will be able to avert the solid waste crisis, the No Program Alternative is characterized in this report by no increase in existing levels of waste diversion and no provision for additional landfill capacity. Consideration of the No Program Alternative, as such, will allow for evaluation of the maximum potential environmental impacts which could result if the proposed program is not implemented.

5.1.1 Time-to-Crisis Analysis

Based on current disposal trends and the potential closure of existing sites under the No Program Alternative, a disposal shortfall of approximately 1,500 tons will occur by the year 1992. The disposal shortfall will increase to approximately 50,000 tons per day (TPD) by the year 2000.

In the past, there were a number of available disposal sites and the daily permitted disposal capacity exceeded disposal needs. If an operating site closed due to permit expiration or capacity depletion, the waste disposal quantities were redistributed to the remaining sites, usually in proportion to the distance. However, with only ten remaining major landfills, each with respective daily limits, the metropolitan area of Los Angeles County (County) is now at the point where it can no longer be assumed that waste loadings from the closure of existing sites will be completely absorbed by the remaining sites, especially in the case of the closure of large existing landfills (Sunshine Canyon, Puente Hills, Lopez Canyon, and Chiquita Canyon) handling between 3,000 and 12,000 TPD each.

5.1.2 Impacts

The impacts associated with an occurrence of a shortfall in waste management capacity is difficult to predict. As an example, the 1992 shortfall in capacity would occur because of the failure to expand Sunshine Canyon Landfill resulting in 6,000 TPD of waste which would then have to be disposed of at other existing sites or in some other manner. Some of this waste could be distributed to other sites; however, since permits or operation constraints would prevent existing landfills from voluntarily accepting all of this increase, a shortfall would still remain. The remaining refuse from the areas served by the Sunshine Canyon Landfill would potentially not be collected regularly and could result in a public health emergency. Serious environmental impacts would exist in the neighborhoods and commercial areas should the waste be allowed to accumulate. These impacts include severe litter problems, rodent and fly infestation, odors and fire hazards.

Most likely, this "excess" refuse from the closure of the Sunshine Canyon Landfill would be required, by regulatory action, to be disposed of at one or more remaining sites on an emergency basis to prevent the occurrence of the above impacts to public health and safety. However, both regional and local environmental impacts would still be experienced if other sites are allowed to accept the waste. From a regional perspective, refuse trucks would have to travel greater distances to reach a disposal facility. Emissions of various pollutants resulting

from the truck transport of refuse in pounds per ton of refuse handled per mile can be calculated. For example, if 3,000 tons of refuse must be hauled 15 additional miles for disposal once a site closes, the resulting increase in emissions could be 86,600 pounds of carbon monoxide (CO), 178,000 pounds of nitrous oxides (NO_x), and 33,110 pounds of sulfur oxides (SO_x) per year. Locally, at remaining disposal sites, the increase in the rate of disposal could result in adverse impacts. The types of potential impacts that might be transferred from the closed site to the remaining sites include additional traffic on surface streets leading to the landfill entrances, increased noise from operations, removal of native vegetation at a faster rate than otherwise would be necessary, and early closure of the remaining sites.

If no permits are granted for the expansion of existing sites, and a new site is necessarily implemented to provide requisite disposal capacity, regional air quality impacts would also be experienced, since utilization of the new sites would involve longer haul distances. The traffic impacts in the year 2010 resulting from this scenario, assuming a new site is developed, would amount to 28.6 to 77.2 million additional miles (up to 55 miles per one-way trip) traveled per year by refuse trucks which would correspond to an emissions increase of 0.76 to 1.4 million pounds of CO, 1.6 to 2.9 million pounds of NO_x, and 0.29 to 0.54 million pounds of SO_x, depending on the proximity of the new site.

Another possible occurrence resulting from the No Program Alternative would be the unplanned out-of-county exportation of waste, as is currently happening on the East Coast of the United States where waste is taken out of one jurisdiction and disposed of wherever the closest capacity exists, whether in the county or next state. For the most part, the potential environmental impacts of landfiling would be transferred from one location to another but at a significantly higher cost and higher vehicle emissions due to the longer haul.

5.1.3 Other Uses for Potential Sites Under the No Program Alternative

Under the No Program Alternative, existing landfills would not be expanded, nor would Blind Canyon, Mission-Rustic-Sullivan Canyons, or Towsley Canyon be developed as landfills. Section 4.1 of the Program EIR included a discussion of current land use and zoning for each of the potential landfill sites. If landfills are not developed, future uses of the property may be dictated by the existing zoning associated with each site.

The Los Angeles County Zoning Ordinance designates the Blind Canyon area as A-2-2, allowing for such uses as agricultural uses, various livestock and animal uses, or oil well operation. Residential uses are also permitted with a minimum allowable lot size of 2 acres. The portion of Blind Canyon within Ventura County is designated as open space with a 160-acre-minimum parcel size. A variety of uses are permitted within this land use designation that relate to agriculture, residential, commercial, recreation, water supply, and waste treatment. In April 1990, a major property owner in the Blind Canyon area signed a Memorandum of Understanding with the Mountains Recreation and Conservancy Authority (MRCA) which calls for the transfer of land within Blind Canyon to the MRCA. The MRCA is a public agency exercising the joint powers of the Santa Monica Mountains Conservancy and the Conejo and Rancho Simi Recreation and Park Districts. The Memorandum of Understanding outlines the immediate gift of approximately 700 acres of land which lie within Los Angeles County and the arrangement of an option to purchase the remainder of the land, which lies within Ventura County. However, this transfer is contingent upon development approvals at other locations which may or may not take place.

All of the Mission-Rustic-Sullivan Canyons area is zoned RE-40-1H in the Los Angeles City Zoning Ordinance. This zoning is equivalent to the open space designation in the Los Angeles City General Plan allowing for recreation, environmental protection and school uses. It should be noted that the potential ultimate use of Mission-Rustic-Sullivan Canyons is addressed in a joint powers agreement between the City and County of Los Angeles which provides that these canyons will not be put to landfill use if Elsmere Canyon is permitted as a Class III landfill. Under the provisions of the Joint Powers Agreement, Rustic-Sullivan Canyons would be purchased from the Sanitation Districts by a Joint Power Authority comprised of the City and County. The property would then be conveyed to another public agency for park and recreational use. Mission Canyon would be developed by the County for a nonsolid waste use.

Towsley Canyon is designated by the Los Angeles County Zoning Ordinance as A-2-2, as is Blind Canyon. As mentioned earlier, this designation allows uses such as agricultural activity, various livestock and animal uses, manure spreading, or oil well production. Residential development is permitted for a minimum lot size of 2 acres. Portions of Towsley Canyon have been proposed for use as parkland.

5.2 ALTERNATE TO PROJECT COMPONENTS

This section provides discussion on alternatives to project components. Alternatives consist of alternative landfill sites and alternative waste management technologies.

5.2.1 Alternate Landfill Sites

As discussed in Chapter 2, a Preliminary Alternate Site Study was jointly prepared by the staffs of the County of Los Angeles Department of Public Works, the County Chief Administrative Office, and the Sanitation Districts. The study is summarized in this section as an introduction to the discussion of alternative landfill sites.

A three-phase approach which considered a comprehensive set of technical, environmental, and social factors was utilized to analyze 101 potential landfill sites within metropolitan Los Angeles County. The first phase involved the determination of the alternate site study area. The second phase consisted of identifying candidate sites by means of a screening process. The third phase involved a numerical rating of the candidate sites.

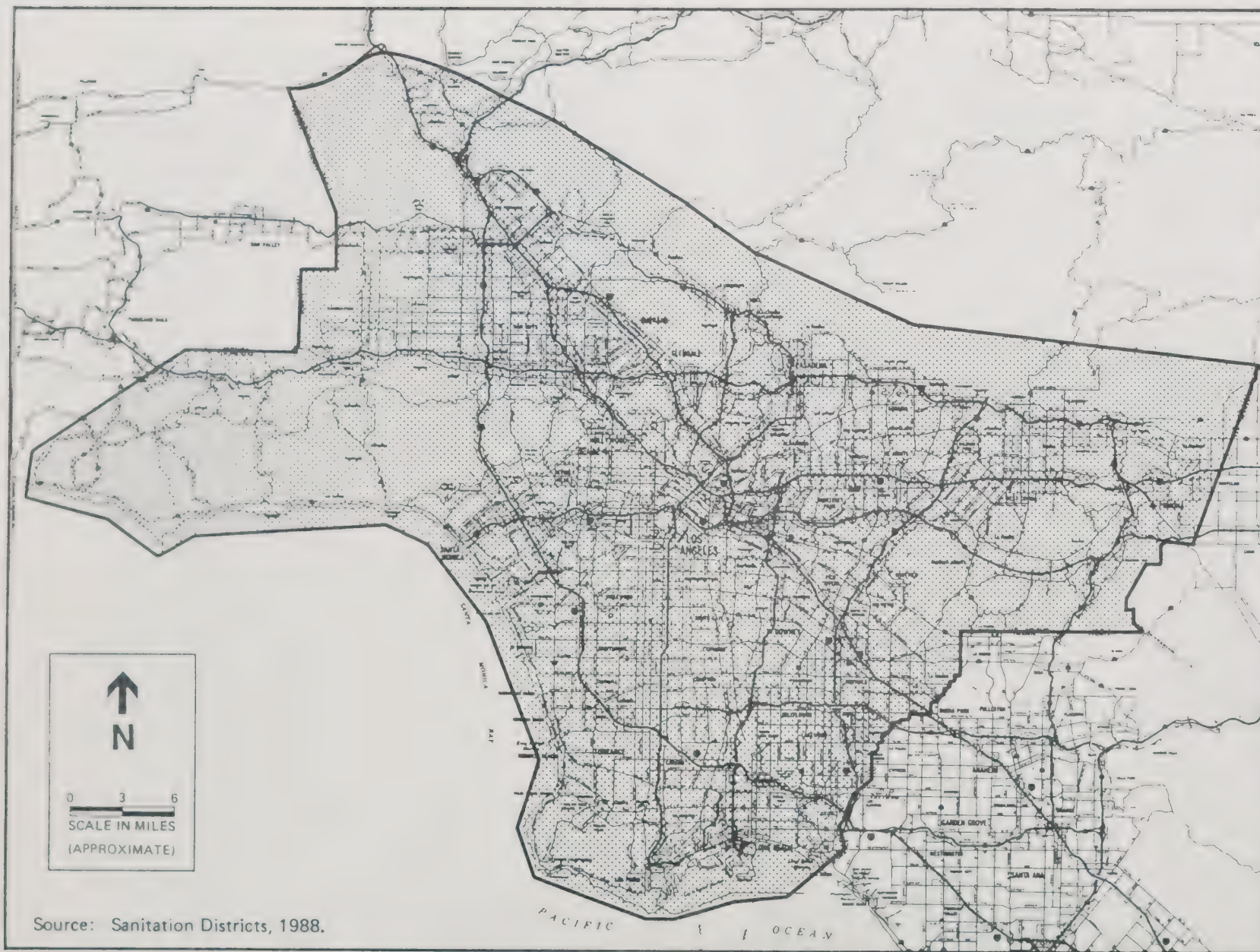
Alternate Site Study Area

Unlike typical siting studies which consider locations of existing landfill sites in determining new site feasibility (due to relative haul distances and landfill closures which could affect the resulting disposal cost), the study considered all areas within the metropolitan area of Los Angeles County to be feasible. The study area was defined by portions of Los Angeles County south of both the Santa Clara River and the San Gabriel Mountains (see Figure 5-1).

Alternate Site Screening Process

A total of 101 potential landfill sites were analyzed within the study area. Because the study was so large, an evaluation process was developed to eliminate unsuitable areas and provide initial screening.

In the initial screening process, a priority was placed on canyon sites which had underlying geology with low permeability due to the natural protection this provides to the groundwater. The initial screening process also considered streets, reservoirs, and housing directly within potential fill areas as fatal flaws for a site. Of the 101 sites analyzed, 38 passed the initial screening.



Source: Sanitation Districts, 1988.

Figure 5-1 Alternate Site Study Area

A more intensive analysis of the 38 sites using an extensive set of criteria established by a Citizens Advisory Committee and the Sanitation Districts staff comprised the second step in the screening process. The criteria included three categories, each with a distinct set of parameters: (1) service--ability of the site to meet regional solid waste management objectives, (2) urban uses--impacts on local land use, and (3) conservation-preservation of natural land and conservation of resources. Table 5-1 summarizes the list of evaluation criteria.

A critical deficiency occurred when a site was unable to satisfy one or more of the evaluation criteria and the deficiency could not be practically remedied. Critical deficiencies in the service and urban uses eliminated 28 of 38 sites which passed initial screening. (No sites were assessed critical deficiencies based on conservation criteria because of the need for detailed analysis prior to making that determination.) Locations of the 10 sites with no critical deficiencies are shown on Figure 5-2.

Rating of Alternate Sites

Rating the alternate sites which survived the second step of the screening process and were not considered to have critical deficiencies comprised the third phase of the analysis. A weight was given to each evaluation criterion indicating its relative importance. Overall, the weighting was balanced with the relative importance attached to the three general categories of criteria and service, urban uses, and conservation.

Scores of one to five were assigned to each rating criteria as it related to a particular landfill site and multiplied by the criteria weights to obtain numerical ratings for each of the criteria. A summing of these rates produces a composite rating for each site.

The four highest ranking sites--Blind Canyon, Elsmere Canyon, Mission-Rustic-Sullivan Canyons and Towsley Canyon--appear to have characteristics which warrant detailed investigation regarding their development as potential disposal facilities. Three of these sites have been addressed in the Program EIR. The fourth location, Elsmere Canyon, is currently being evaluated in a separate environmental impact report/environmental impact statement (EIR/EIS) being prepared by the U.S. Forest Service and the County of Los Angeles Department of Regional Planning on behalf of the private proponent, the Elsmere Corporation. Inasmuch as Elsmere Canyon appears to be a feasible alternative to the sites proposed in this report, an environmental analysis was conducted for this site based upon

Table 5-1 Alternate Site Evaluation Criteria

Category	Criteria
<u>Service</u>	(Disposal Operations Service Criteria)
1	Acquirability--time to acquire and cost of acquisition.
2	Haul time--typical time to haul to the site by collection vehicles.
3	Geology--geologic formations and seismicity with respect to containment and drainage; availability of off-site storm drains.
4	Access--off-highway haul route, considering length, width, grade, and construction required.
5	Capacity and cover--volume available for disposal; adequate area for operations; sufficient cover soil.
6	Preparation--preparation required prior to disposal, considering grading, barriers, berms, and water supply.
7	Energy use--by collection vehicles and associated disposal operations.
<u>Urban uses</u>	(Adjacent Urban Uses Criteria)
8	Isolation--from homes, schools, churches.
9	Neighborhood--compatibility with zoning, planning, and adjacent property.
10	Mitigatability--of adverse impacts (odor, methane gas, view disturbance, noise, vectors, dust) on adjacent urban uses.
11	Traffic--impact of disposal operations on traffic flow along streets and freeways in the area.
12	Uses displaced--number and community value of any improvements on the site that landfilling would eliminate.
<u>Conservation</u>	(Conservation and End Use Criteria)
13	Restorability--amenability of site to restoration for end use; preserving, restoring, and/or buffering habitat, wildlife corridors, watershed, and viewshed.
14	Ecology--compatibility of natural values in the area in its present state with landfilling, considering existing disturbance.
15	Recreation--compatibility of outdoor recreation on the site, and in the region including the site, with landfilling--considering any difficulty of development for recreation that landfilling may create or remove.
16	Open space plans--degree of compatibility with regulations and plans designed to preserve open space.
17	Materials recovery--character and location of site with regard to supporting materials recovery from waste.
18	Energy extraction--character and location of site with regard to supporting energy recovery from waste.
19	Air quality--pollution from collection vehicles and on-site equipment.
20	Antilitter--character and location of site with regard to reducing littering and indiscriminate dumping.

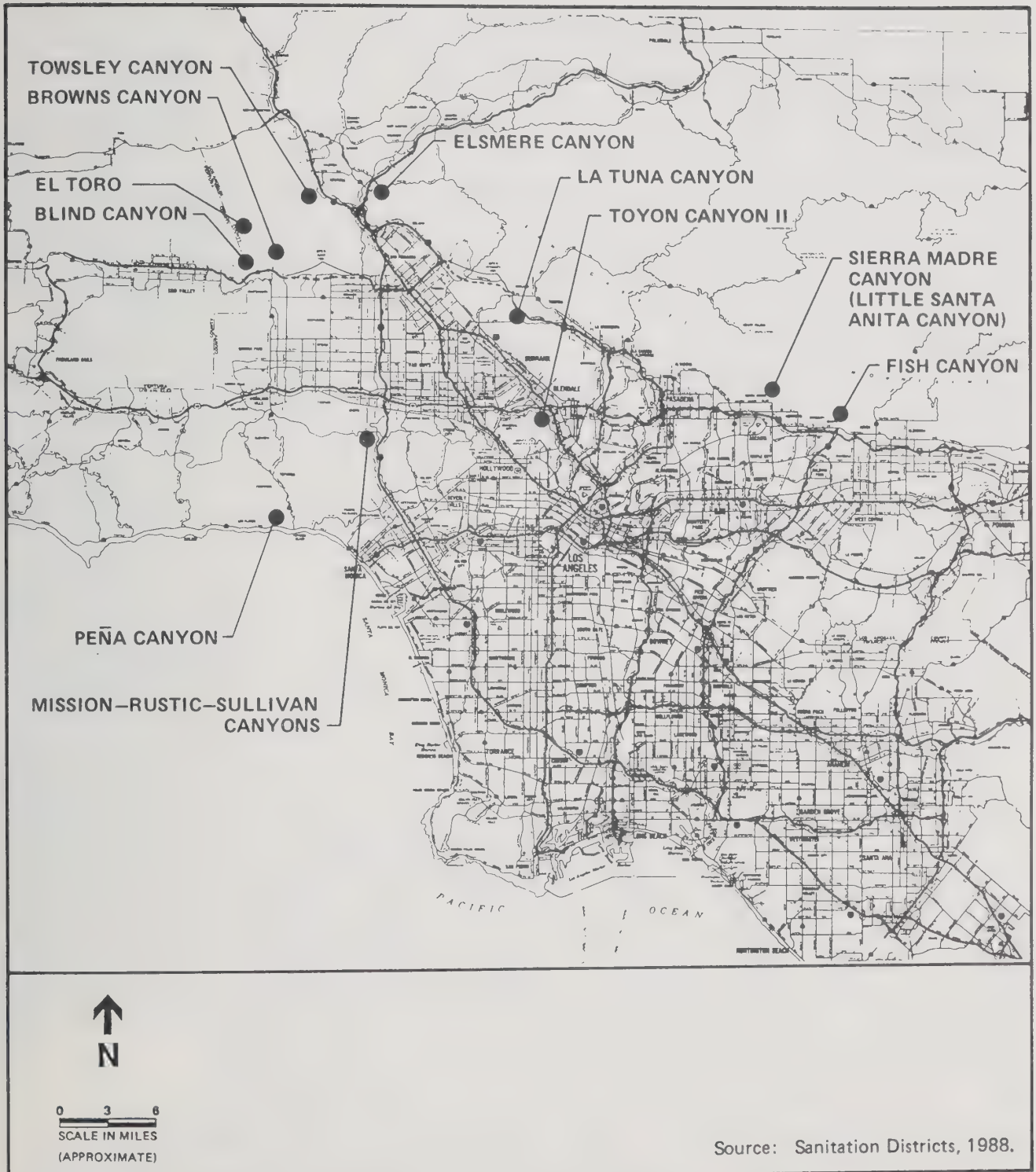


Figure 5-2 Potential Landfill Sites with No Critical Deficiencies Assessed During Preliminary Alternate Site Study

information which was presently available. The evaluation was made in the greatest detail possible, given the extent of the information, to satisfy California Environmental Quality Act (CEQA) requirements for addressing alternatives as well as to facilitate the decision-making process regarding the proposed sites.

Upon closer evaluation, conducted during the preparation of the Program EIR, the remaining six sites were determined to either possess a serious deficiency or a fatal flaw, rendering them significantly environmentally inferior to the sites proposed in this report, infeasible and/or unable to meet the objective of the proposed Integrated System. Each of these six sites--Browns Canyon, Fish Canyon, Sierra Madre Canyon, La Tuna Canyon, Pena Canyon and Toyon Canyon II--is addressed following the Elsmere Canyon discussion. In addition, analysis of another site, El Toro Canyon, recently proposed by a private proponent independent of the siting study is included. The text discussion focuses primarily on the site characteristics which led to their elimination from consideration. A summary table is provided following the discussion which briefly outlines other potential impacts.

5.2.2 Elsmere Canyon

Elsmere Canyon has been proposed by the Elsmere Corporation for development as a Class III landfill accepting nonhazardous solid waste. As indicated above, a separate EIR/EIS is being prepared for that site.

Site Description

The site is located in unincorporated Los Angeles County east of the Antelope Valley (14) Freeway, approximately 2 miles north of the intersection of the Antelope Valley Freeway and the Golden State (I-5) Freeway. The entire site would encompass about 1,500 acres with the proposed fill area utilizing approximately 650 acres, as shown on Figure 5-3. As indicated, portions of the site are located within U.S. Forest Service property. Elsmere Canyon has a disposal capacity of approximately 190 millions tons.

Proposed Site Operation

As outlined in an application to the County Department of Regional Planning for a Conditional Use Permit (August 1989), the proposed site operation would be open to the public Monday through Saturday, 24 hours per day. The expected life of the landfill would be approximately 38 to 60 years based upon an assumed rate of disposal between 10,000 and 16,500 TPD. Trucks delivering waste to the site would be directed to the disposal

area where the material would be dumped, compacted, and covered with a minimum 1-foot layer of soil. The cover dirt would be excavated from within the disposal area. Various recycling activities would be initiated at the site including composting, a buy-back center, wood and asphalt recovery, and used oil recycling.

Proposed Environmental Protection Features

The proposed environmental protection features consist of the following:

- **Groundwater Protection System.** A groundwater collection and composite liner system would be utilized along historic canyon bottoms. This system would consist of perforated pipes placed in gravel-filled trenches. Any groundwater collected would be disposed of appropriately or reused on site for dust control or irrigation. The proposed liner system would meet all requirements of the Regional Water Quality Control Board, including a minimum permeability of 10^{-6} cm/sec. The system would include a collection and removal system for potential leachate.
- **Drainage Control System.** A drain system, consisting of retention ponds and a piping network and designed to be capable of managing runoff from a 100-year storm is proposed.
- **Landfill Gas Recovery System.** A proposed gas recovery system would be installed with vertical wells constructed along the front face benches and horizontal trenches provided at approximately 40-foot elevation increments covering the deck areas.
- **Environmental Monitoring Program.** Monitoring programs would be conducted for both groundwater protection systems (i.e., groundwater collection and leachate collection and removal systems) and landfill gas recovery systems.
- **Closure and Postclosure Maintenance/Use.** All legal requirements for establishing financial assurance for the costs of long term maintenance would be met. A specific postclosure use for this project has not been planned but the ultimate use would be designed to be compatible with adjoining land uses, including the Angeles National Forest property.

Environmental Impact Analysis

Table 5-2 summarizes potential impacts from the Elsmere Canyon Landfill. An overview of selected issue areas examined (biological resources, geology, water resources, and traffic) is presented below. The following discussions are based on information provided through personal communication with Elsmere Corporation staff.

Biological Resources. A literature research was conducted to determine the potential presence of sensitive species. The California Department of Fish and Game Natural Diversity Data Base was utilized to determine the likelihood of rare and endangered species in the Elsmere Canyon region. On March 7, 10, and 31; April 23; May 19; June 3 and 4; and July 15, 1989, field surveys were conducted of the proposed landfill site and access road alignments. Inaccessible areas were examined using aerial photographs and/or surveyed with binoculars from nearby vantage points.

Flora

The vegetation of the project site is predominately mixed chaparral of which Hoary Leaf Ceanothus (Ceanothus crassifolius) is the dominant species. Other chaparral species found on site include Hairy Ceanothus (C. oliganthus) and Chamise (Adenostoma fasciculatum).

Coastal sage scrub occurs in relatively restricted areas, near the western border of the property generally on dry slopes with southerly exposures. These communities are dominated by Coastal Sagebrush (Artemisia californica) with White Sage (Salvia apiana), Black Sage (Salvia mellifera), and Flat-Top Buckwheat (Eriogonum fasciculatum) as common associates.

Riparian habitats are limited on site. The larger tributaries, including Elsmere Creek, have scattered Western Sycamore (Plantanus racemosa) and Willows (Salix spp.) and occasional Cottonwoods (Populus fremonti). Minor drainages support Mule Fat (Baccharis glutinosa).

Oak woodland occur in areas with a northern or northeastern exposure. The dominant species is Coast Live Oak (Quercus agrifolia), with occasional Southern California Black Walnut (Juglans californica) and Flowering Ash (Fraxinus dipetala).

Table 5-2 Summary of Potential Impacts from Elsmere Canyon

Issue	Impacts and mitigation measures
Land use	Portions of site are located within the Angeles National Forest. Conditional Use Permit would be required from Los Angeles County Regional Planning Commission.
Geology, soils, and water resources	Potential impacts could be mitigated by methods similar to those proposed in this report.
Biological resources	Potential loss of sparsely-located riparian habitat and approximately 2,200 oak trees. These impacts could be mitigated by methods similar to those proposed in this report for other potential sites.
Traffic	Proposed access is via a dedicated freeway off-ramp. No significant impacts anticipated. No cumulative impacts would exist from concurrent development of Elsmere Canyons with other potential sites.
Air quality	Initial modeling shows no anticipated significant impacts from development of Elsmere Canyon either alone or concurrently with Towsley Canyon, assuming mitigation measures similar to those proposed in this report.
Odor and landfill gas	Potential impacts could be mitigated by methods similar to those proposed in this report.
Noise and vibration	Due to remoteness of site, no significant impacts anticipated.
Aesthetics	Significant change in landform similar to other potential sites. Potential visual impacts from Santa Clarita Valley.
Public health and safety	Potential impacts could be mitigated by methods similar to those proposed in this report.
Cultural and paleontological resources	Should significant cultural or paleontological resources exist, potential impacts could be mitigated by methods similar to those proposed in this report.
Public service and utilities	Potential impacts could be mitigated by methods similar to those proposed in this report.

Sources: Sanitation Districts, 1990.
 Conditional Use Permit filed with County by the Elsmere Corporation, 1989.
 Oak Tree Permit filed with County by the Elsmere Corporation, 1989.
 Personal communication with the Elsmere Corporation, 1990.

There is no coniferous forest on site, only a few Big Cone Douglas Fir (Pseudotsuga macrocarpa) trees scattered on the steep rock wall downstream from the project. Absence of this community is most likely due to the last major fire in the area, the 1952 Newhall fire. Additionally, the project site is near the lower elevational limit of this species.

Based on the results of the field surveys conducted, no state or federally listed rare, threatened or endangered plant species were found or are expected to occur on site. However, removal or alterations of riparian/wetlands habitat would most likely require a stream alterations agreement from the California Department of Fish and Game.

Fauna

The chaparral habitat found on site supports a number of small animals and birds. Small mammal trapping and field observations documented the existence of the following mammals within the project area: Broad-Handed Mole (Scapanus latimanus), Brush Rabbit (Sylvilagus bachmani), Merriam's Chipmunk (Tamias merriami), California Ground Squirrel (Spermophilus beecheyi), Bottas Pocket Gopher (Thomomys bottae), California Pocket Mouse (Perognathus californicus), Canyon Mouse (Peromyscus crinitus), Dusky-Footed Woodrat (Neotoma fuscipes), Coyote (Canis latrans), Gray Fox (Urocyon cinereoargenteus), and Mule Deer (Odocoileus hemionus).

Due to the intermittent nature of the stream courses, permanent habitation by aquatic wildlife species is limited to common invertebrates and amphibians typical to intermittent streams of the region. Reptiles and amphibians observed in the project area include: Pacific Treefrog (Hyla regilla), Coast Horned Lizard (Phrynosoma coronatum), Western Fence Lizard (Sceloporus occidentalis), Western Racer (Coluber constrictor), Western Pacific Rattlesnake (Crotalus viridis), Striped Racer (Masticophis lateralis), and Gopher Snake (Pituophis melanoleucus).

Elsmere Canyon is within the historic range for two listed endangered animal species, the California Condor (Cymnogyps californianus) and the Least Bell's Vireo (Vireo belli pusillus).

The California Condor is listed as endangered by both the State and Federal Wildlife agencies with all remaining individuals presently in captivity. If the current program to reestablish the population is successful, condors would most likely be introduced into the Los Padres and Angeles

National Forests. Development of Elsmere Canyon as a landfill site could potentially result in the loss of nesting and foraging areas for the California Condor.

The Least Bell's Vireo is listed as endangered by both the California Department of Fish and Game (CDFG) and the United States Fish and Wildlife Service. The CNDDDB reports include only irregular and infrequent sightings for the project area, which is included in a 250 square mile area covered by the San Fernando, Oat Mountain, Mint Canyon, and Newhall Quadrangles (United States Geologic Society, 7.5-minute maps). The closest of these sightings was seen seven miles to the south of Elsmere Canyon. The riparian understory found at Elsmere Canyon is inadequate for nesting, and therefore breeding habitat is not present at the project site. Although, the species could occur in migration, it would be considered rare and of a transitory nature.

A San Diego Coast Horned Lizard (Phrynosoma coronatum blainville) was observed onsite during a field visit. This species is considered a species of special concern by the CDFG (Category 2), and may be eventually added to the list of Endangered and Threatened Wildlife if in the future it is determined such status is warranted.

Consideration of species of "Special Concern" is required pursuant to the CEQA. "Special Concern" species includes species that have not been formally proposed for listing but may eventually be considered for listed status. Species of "Special Concern" expected to frequent the site include Sharp-Shinned Hawk (Accipiter striatus), Cooper's Hawk (Accipiter cooperi), and Yellow Warbler (Dendroica petechia).

Geological Resources

Regional Geology. The proposed Elsmere Canyon Landfill site is situated in the Transverse Ranges Geomorphic Province. The Transverse Ranges are characterized by an east-west structural grain that is transverse to the dominant north-south structure of the major mountain chains of California. The proposed landfill site is located at the western end of the San Gabriel Mountains near the center of the Transverse Ranges Province.

Bedrock Formations. The Elsmere Canyon site is underlain by two primary rock terrains. The eastern portion of the site consists of igneous and metamorphic basement rocks of

the San Gabriel Mountain Terrace complex while the western portion of the site consists of sedimentary rocks from the Ventura Basin.

The San Gabriel Mountain Terrace (SGMT) basement complex consists primarily of Mesozoic to pre-Mesozoic igneous and metamorphic rocks composed of moderately foliated granodiorite and granodiorite gneiss with lesser amounts of Calc-silicate rock and marble intermixed throughout. Foliation within the SGMT typically trends nearly east-west and dips moderately to steeply to the north. Fractures and joints are randomly oriented with typical fracture spacing from 4 to 25 feet in relatively unweathered areas.

The Eocene Series consists of an unnamed group of rocks composed primarily of massive to very thickly bedded light brown to tan orange sandstone with local graded bedding. This sandstone is interbedded with massive to thinly bedded clayey siltstone and massive bedded conglomerates. Fractures and joints within the massive sandstones typically display a hard, bright, red hematite staining.

The Towsley Formation in the site area consists of a basal conglomerate composed of locally derived granodiorite and related metamorphic clasts, a thick section of fossiliferous, black to gray, silty sandstone, and a thick section of massive, mottled tannish-brown to yellowish-orange siltstone containing up to 20 percent carbonaceous plant matter. A high concentration of oil and organic matter is found in the sandstone unit.

The Pico Formation is composed of thinly laminated to massive siltstone, sandstone, and conglomerate. The basal unit of the Pico Formation consists of an orange to tan cobble to small boulder conglomerate with minor interbedded sandstone. This sequence is overlain by poorly cemented sandstone with discontinuous lenses of conglomerate.

The Saugus Formation is regionally divided into two members with only the Sunshine Ranch member exposed in the vicinity of the site. In the Elsmere Canyon area, the Sunshine Ranch member is composed of gray-green sandy to clayey siltstone conformably grading upward from the Pico Formation.

A determination of the rippability of the bedrock formations at Elsmere Canyon was conducted using seismic geophysical methods. The rippability of a material is defined as the ability of the soil or rock to be excavated by earth-moving equipment. Based on the results of the geophysical analysis, most of the materials at the site can

be excavated as necessary using conventional equipment. The igneous and metamorphic materials of the basement complex have seismic velocities that are quite high indicating that it may be rippable using only specialized equipment or methods.

Surficial Deposits. Alluvial materials derived from the erosion of the bedrock formations by running water was found within the stream drainages at the bottom of the canyons. The alluvium is composed of poorly sorted, crudely stratified, silty sand and sandy silt with intermixed gravels, cobbles, and boulders. The thickness of the alluvium at the base of Elsmere Canyon is thought to be about 75 feet. The composition of the alluvium in the main canyon drainages is dominated by material derived from the surrounding bedrock formations.

Faulting. The Elsmere Canyon site is located between the San Gabriel Fault Zone and the Santa Susana/San Fernando Fault System. The predominant fault which transverses the site is the Whitney Canyon Fault. The Whitney Canyon Fault is a major structural discontinuity between the basement complex of the San Gabriel Mountains and the sedimentary formations of the Ventura Basin. While studies are currently underway to evaluate the age of the Whitney Canyon Fault, preliminary evidence indicates that the fault is not active (it has not moved within the last 11,000 years).

Water Resources

Regional Water Resources. The bedrock formations underlying the proposed landfill site and its vicinity are considered to be part of the nonwater-bearing rock series of the Santa Susana and San Gabriel Mountains. Wells drilled in these formations have produced very low yields. In addition, the quality of the water that is found tends to be unsuitable for most beneficial uses due to the high quantities of tar and oil. There are no known water wells in or adjacent to the proposed landfill. The nearest groundwater basin is the Saugus Basin located to the west of the site.

Surface Water. Water springs and seeps are found throughout the site area with most occurring near or at the basement complex/sedimentary unit contact. The relatively impermeable basement rock perches water migrating through the overlying Towsley and Pico Formations and causes it to flow down gradient to exposures in the canyon walls. These springs flow during the winter and spring and tend to dry up during the summer. Tar and oil seeps are commonly associated with the water and often causes the water to

turn a translucent yellow to dark brown color and give off a weak to strong hydrogen sulfide smell. Prior to any landfilling, a minimum of four quarterly samples of surface water would be analyzed to determine background water quality conditions.

Groundwater. Prior to the placement of any wastes at Elsmere Canyon, a series of background monitoring wells would be installed at the site. These wells would monitor both the alluvium and bedrock strata for a minimum of at least 1 year. Quarterly samples would be obtained from the monitoring wells and analyzed to determine applicable indicators parameters. The indicator parameters would be used to establish water quality protection standards for the site.

Traffic. Proposed access to the site would be via a newly constructed off-ramp on the Antelope Valley (14) Freeway southwest of the existing San Fernando Road. The construction, for which the approval of Caltrans would be required, would include freeway exit and entrance ramps and an overpass.

It is estimated that the number of trucks entering the landfill on an average daily basis would be up to 2,300 vehicles. Since the facility would be open 24 hours per day with an emphasis on receiving the majority of daily waste in the early morning, midday, and late evening, impacts on local and regional traffic during peak commuter hours would be minimized. In addition, since a dedicated off-ramp is proposed for the potential Elsmere Canyon Landfill, impacts to local traffic would also be minimized.

Summary. Depending upon the number of potential new sites evaluated in this report which are ultimately permitted, the disposal capacity of Elsmere Canyon may also be needed.

5.2.3 Browns Canyon

Table 5-3 is a summary of potential impacts from Browns Canyon and other alternative sites discussed below. Browns Canyon is located north of the Simi Valley Freeway, Highway 118, near Chatsworth (Figure 5-4). Access to the project would be provided via Browns Canyon Road. The potential site, located in an unincorporated area of the County, has a capacity of approximately 125 million tons. This site was proposed by the City of Los Angeles as a potential landfill site in 1975. At that time, the City of Los Angeles chose not to pursue the Brown Canyon Landfill project.

Table 5-3 Summary of Potential Impacts from Alternate Sites

Location	Geology, soils and water resources	Biological resources	Traffic	Air quality	Odor and landfill gas
Brave Canyon	Potentially active faults are located within the site which may preclude development as a landfill.	Potential loss of riparian oak woodland habitat.	Proposed access route runs through a sparsely populated residential area.	Potential impacts could be mitigated by methods similar to those proposed in this report.	Potential impacts could be mitigated by methods similar to those proposed in this report.
El Toro Canyon	Potential impacts could be mitigated by methods similar to those proposed in this report. Seismic activity unknown.	Characterization of biological resources on site unknown.	Proposed access through residential areas along Topanga Boulevard.	Potential impacts could be mitigated by methods similar to those proposed in this report.	Potential impacts could be mitigated by methods similar to those proposed in this report.
Fish Canyon	Comprises an extremely large drainage area; including 80 ft. falls. Adequate drainage control is likely to be infeasible. Limited cover soil available. Seismic activity unknown.	Loss of highly developed riparian habitat which includes presence of perennial stream.	Access would be through residential areas near Azusa/Duarte boundary.	Potential impacts could be mitigated by methods similar to those proposed in this report.	Potential impacts could be mitigated by methods similar to those proposed in this report.
La Tuna Canyon	Potential impacts could be mitigated by methods similar to those proposed in this report. Seismic activity unknown.	Reserved as open space because of the site's biological significance.	Access would be via La Tuna Canyon Road, through residential and commercial areas.	Potential impacts could be mitigated by methods similar to those proposed in this report.	Potential impacts could be mitigated by methods similar to those proposed in this report.
Peña Canyon	Potential impacts could be mitigated by methods similar to those proposed in this report. Seismic activity unknown.	Characterization of biological resources on site unknown.	Peña Canyon is distant from freeway access. Access to the site would be via either residential areas to the north or Pacific Coast Highway, currently congested.	Potential impacts could be mitigated by methods similar to those proposed in this report.	Potential impacts could be mitigated by methods similar to those proposed in this report.
Sierra Madre Canyon (Little Santa Anita Canyon)	Comprises an extremely large drainage area. Adequate drainage control is likely to be infeasible. Limited cover soil available. Seismic activity unknown.	Loss of highly developed riparian habitat which includes presence of perennial stream.	Access to the site would be through heavily populated areas. The canyon is distant from freeway access.	Potential impacts could be mitigated by methods similar to those proposed in this report.	Potential impacts could be mitigated by methods similar to those proposed in this report.
Toyon Canyon II	The site contains faults capable of causing surface rupture.	The site is part of an Ecologically Important Area and includes riparian vegetation. Compliance with oak tree ordinance requirements would mitigate the loss of at least 60 oak trees.	Traffic from a landfill in Toyon Canyon II could potentially significantly impact Griffith Park related traffic.	Regional air emissions due to landfill traffic would be lower than other alternate and proposed sites due to central location. Potential stationary source emission impacts could be mitigated by methods similar to those proposed in this report.	Potential impacts could be mitigated by methods similar to those proposed in this report.

Table 5-3 Summary of Potential Impacts from Alternate Sites (continued)

Location	Noise and vibration	Aesthetics	Public health and safety	Cultural resources	Public service and utilities
Browns Canyon	Potential significant noise impacts on residents from refuse vehicle traffic along access road.	Change in landform. Potential view of final landfill surface and/or operating area from existing residential development 1 to 2 miles south of canyon.	Potential impacts could be mitigated by methods similar to those proposed in this report.	Unknown whether significant cultural, historical or paleontological resources exist.	Potential impacts could be mitigated by methods similar to those proposed in this report.
El Toro Canyon	Due to remoteness of site, no significant impacts anticipated.	Change in landform. Visual access likely due to remoteness of site.	Potential impacts could be mitigated by methods similar to those proposed in this report.	Cultural resources on site are presently known.	Isolation of site could make provision of utilities prohibitively difficult.
Fish Canyon	Potential significant noise impacts on residents from refuse vehicle traffic along access road.	Change in landform. Potential visual access from the 210 Freeway.	Potential impacts could be mitigated by methods similar to those proposed in this report.	Cultural resources on site are presently unknown.	Potential impacts could be mitigated by methods similar to those proposed in this report.
La Tuna Canyon	Potential significant noise impacts on residents from refuse vehicle traffic along access road.	Change in landform. Visual access from La Tuna Canyon Road.	Potential impacts could be mitigated by methods similar to those proposed in this report.	Cultural resources on site are presently unknown.	Potential impacts could be mitigated by methods similar to those proposed in this report.
Peña Canyon	Potential significant noise impacts on residents from refuse vehicle traffic along access road.	Change in landform. Potential visual access from residential development north of the site and from Pacific Coast Highway south of the site.	Potential impacts could be mitigated by methods similar to those proposed in this report.	Cultural resources on site are presently unknown.	Potential impacts could be mitigated by methods similar to those proposed in this report.
Sierra Madre Canyon (Little Santa Anita Canyon)	Potential significant noise impacts on residents from refuse vehicle traffic along access road.	Change in landform. Potential visual access from the City of Sierra Madre.	Potential impacts could be mitigated by methods similar to those proposed in this report.	Most of the site lies within the Sierra Madre Historical Wilderness area with historical structures present.	Potential impacts could be mitigated by methods similar to those proposed in this report.
Toyon Canyon II	1983 EIR predicted potentially significant increases in ambient noise levels in Griffith Park due to landfill operation in Toyon Canyon II.	Change in landform. Fill area would be clearly visible from surrounding communities to the north and east of the site.	Potential impacts could be mitigated by methods similar to those proposed in this report.	The 1983 EIR determined that no significant archaeological resources exist on site. Although the site is considered to be of high paleontological significance, impacts could be mitigated by methods similar to those proposed in this report.	Fuel consumption by refuse vehicles would be minimized due to central location. Other potential impacts related to public service and utilities could be mitigated by methods similar to those proposed in this report.

Source: Sanitation Districts, 1990.

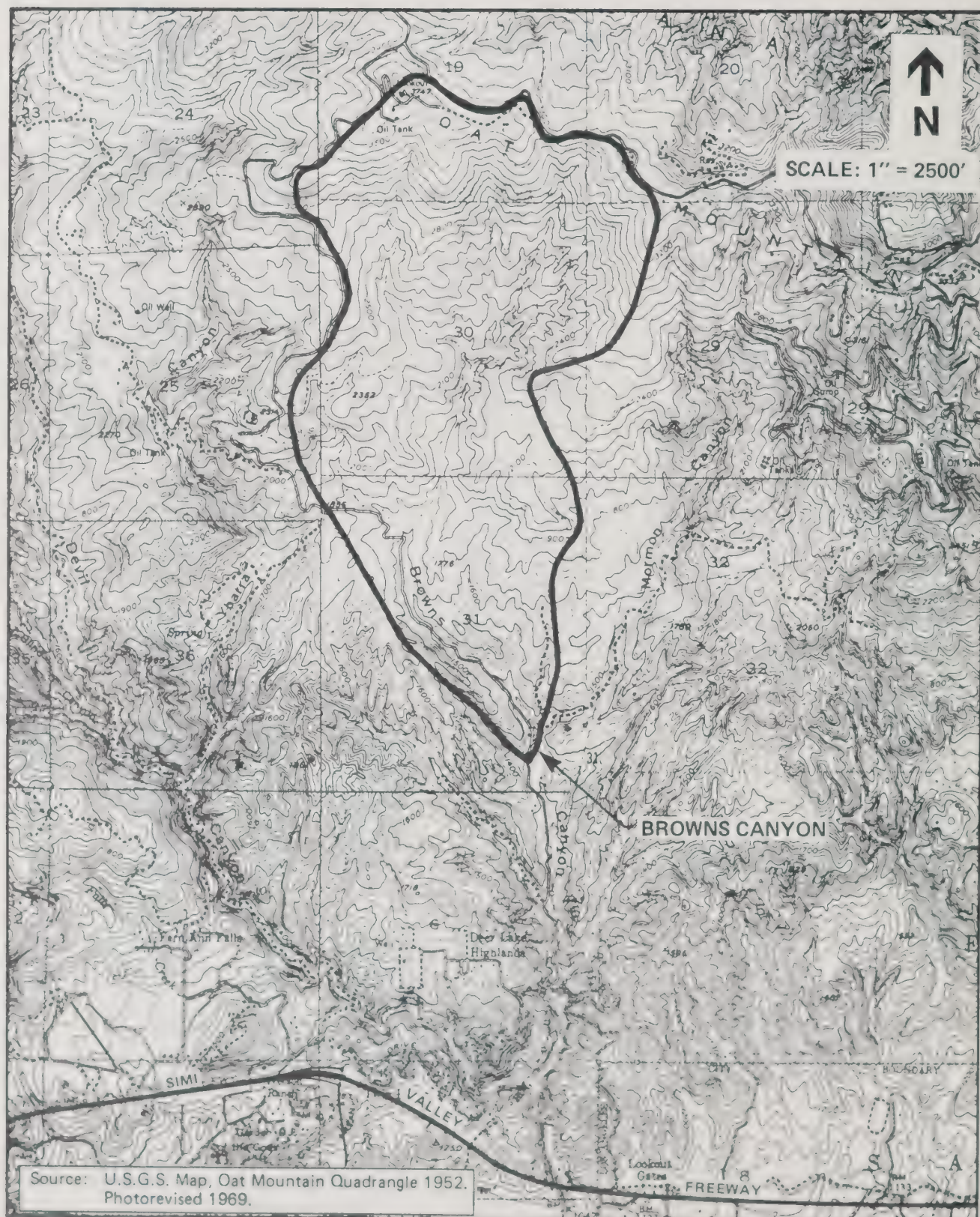


Figure 5-4 Brown Canyon Landfill Site

Based on ratings in the Preliminary Alternate Site Study, Browns Canyon was one of the six sites identified in the Solid Waste Management Action Plan which called for studies to be conducted on the environmental and technical feasibility of the sites for landfill development. In March 1989, the Earth Technology Corporation conducted a geological feasibility investigation of Browns Canyon under the direction of the Sanitation Districts. Fieldwork included geologic mapping, seismicity evaluations, drilling and logging of boreholes, and permeability testing. Findings from this study, summarized in the following paragraphs, regarding the possibility of seismic activity in the canyon led to the termination of further evaluation of Browns Canyon for potential use as a landfill.

Browns Canyon is located within the Santa Susana Fault Zone. The Santa Susana Fault is associated with a seismically active zone of north-dipping thrust faults, some for which Holocene (referring to within the past 11,000 years) ground rupture has been observed. The recency of seismic activity suggests that the entire zone may be active, including the Santa Susana Fault. Based upon the information reviewed in the study, the consultant reported that mapping of this fault zone is subject to conflicting interpretation and that activity or inactivity could not be determined without difficulty. Siting criteria established in Title 23, Subchapter 15 of the California Administrative Code requires that new Class III landfills not be located on a known Holocene fault. Because documenting compliance of Browns Canyon with this criteria would be extremely complex given the degree of controversy surrounding the possible presence of seismic activity within the canyon, this site was dropped from further consideration for landfill development. Although the complexity of faulting within Browns Canyon may have serious ramifications for potential landfilling, it does not necessarily preclude other types of development in the area. It should be noted that the Santa Susana Fault is not associated with Blind Canyon.

5.2.4 El Toro Canyon

El Toro Canyon is a site which has been proposed by a private interest independent of the Preliminary Alternate Site Study. The site is located approximately 4.5 miles north of 118 Freeway in the Santa Susana Mountains near the Los Angeles County-Ventura County line (Figure 5-5). Although the capacity of this site appears to be similar to that of the sites proposed in this report, the canyon is quite remote from existing roadways. Proposed access would be via an extension of Topanga Canyon Boulevard through recent residential development, ultimately crossing rugged terrain before reaching the canyon.



Figure 5-5 El Toro Canyon Landfill Site

Implementation of this site for use as a landfill would result in significant unavoidable noise and vibration impacts to the residential areas through which the refuse truck traffic would travel. A potentially feasible alternative access route would be an extension of the proposed Blind Canyon access road north to El Toro Canyon. However, construction of such a road beyond Blind Canyon, a total of approximately 7 miles off the 118 Freeway, over the existing terrain would be extremely costly.

5.2.5 Fish Canyon

Fish Canyon is located in the San Gabriel Mountains within the Angeles National Forest north of the 210 Freeway at approximately the junction of the 210 Freeway and the 605 Freeway (Figure 5-6). Access to the site would be through residential areas. The main canyon encompasses a large drainage area (3,200 acres) which drains along an existing stream bed that flows year round. This stream bed supports a highly developed riparian habitat along the canyon floor.

Fish Canyon has several drawbacks from an engineering standpoint. As rainfall intensities can be very high in mountain areas, development of a landfill in the large drainage area of the main canyon would cause the potential for serious flooding and storm debris accumulation. Due to the significant unavoidable impact discussed above, this site was determined to be clearly environmentally inferior to the proposed sites and dropped from further consideration.

5.2.6 La Tuna Canyon

La Tuna Canyon is located in the City of Los Angeles in the Verdugo Mountains, south of the Foothill (210) Freeway and is estimated to have a capacity of approximately 14 million tons (Figure 5-7). Access to the site would be through La Tuna Canyon Road, along which both commercial and residential development exist. The area contains several small canyons which have been evaluated for use as a landfill on a number of occasions by both public and private entities over the last 15 years. In 1983, the Los Angeles City Council declared that La Tuna Canyon was not to be used for landfill purposes and is to be preserved as open space.

Several factors severely limit the viability of pursuing La Tuna Canyon for use as a disposal site for the Integrated System. Significant noise and vibrations impacts would be experienced along La Tuna Canyon Road due to the landfill traffic. Furthermore, its small capacity in relation to the other proposed sites greatly reduces its ability to make a significant contribution in averting the disposal crisis. At

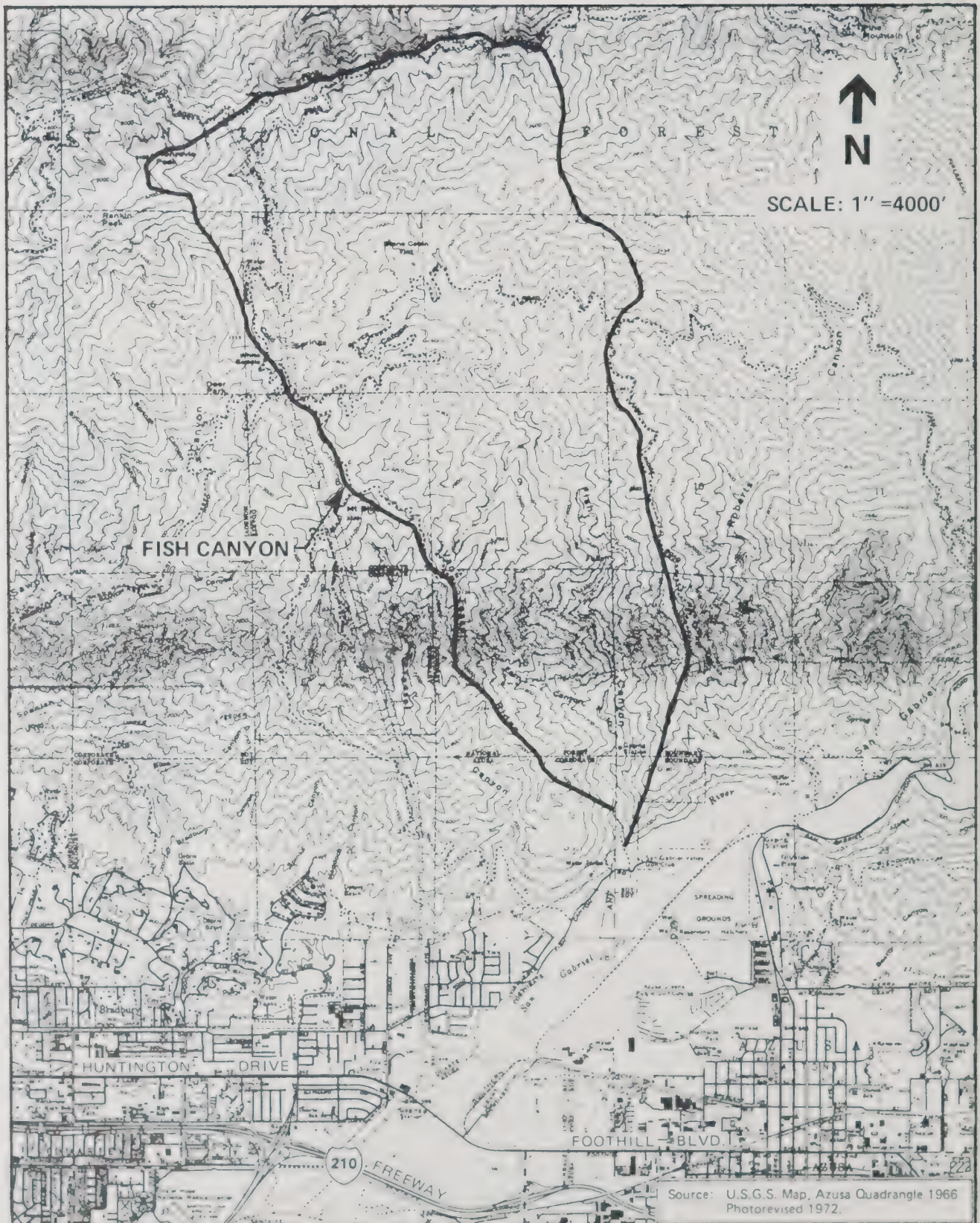


Figure 5-6 Fish Canyon Landfill Site

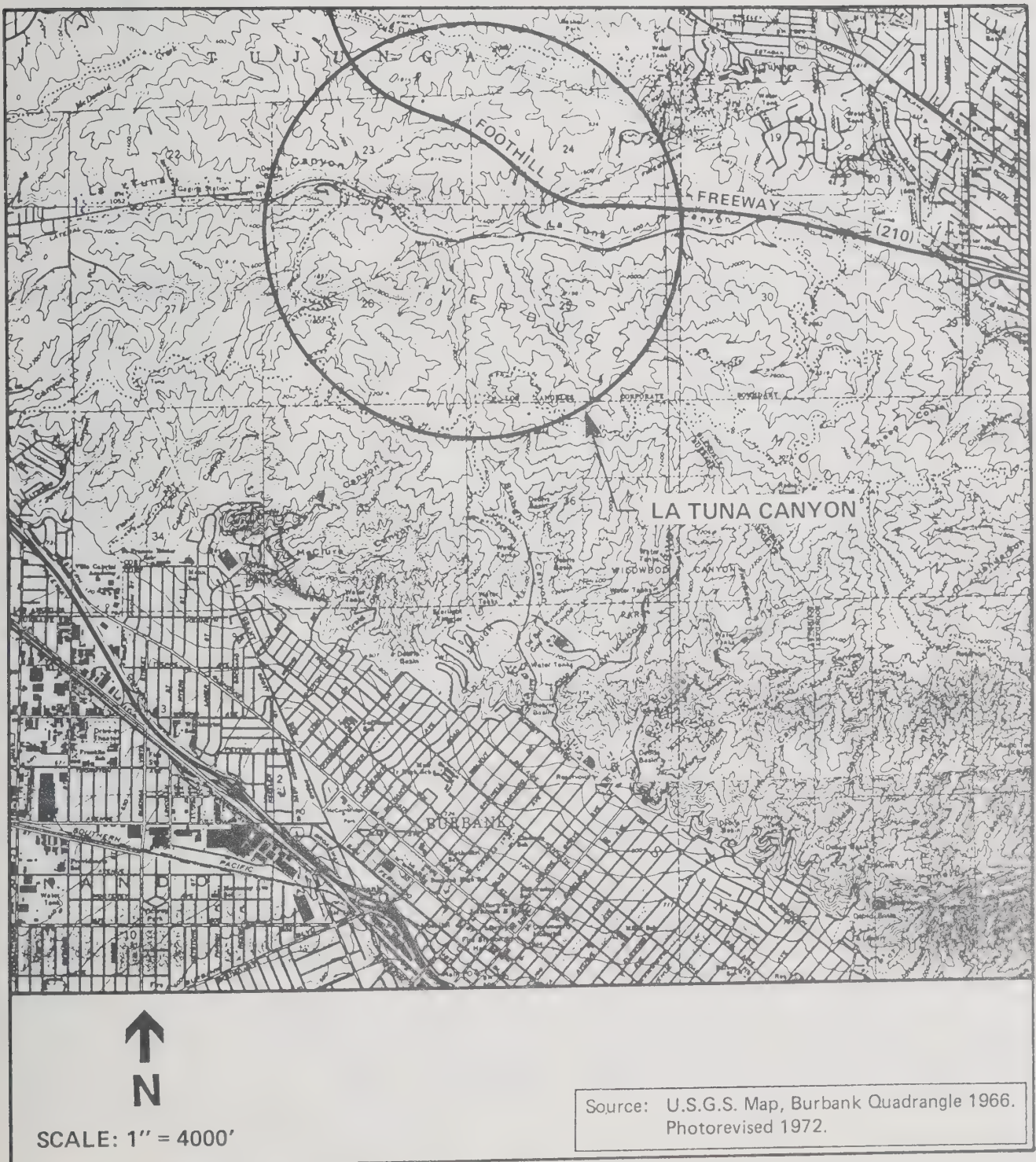


Figure 5-7 La Tuna Canyon Landfill Site

an assumed maximum daily tonnage rate of 16,500 TPD, a landfill in La Tuna Canyon would contain less than 3 years capacity. Therefore, development of this canyon for a potential new regional landfill facility would not meet the objective of the proposed project, namely to provide effective, long-term solid waste management, and, thus, La Tuna Canyon cannot be considered a feasible alternative.

5.2.7 Peña Canyon

Peña Canyon is located north of Pacific Coast Highway in the Santa Monica Mountains, west of Topanga Canyon Boulevard (Figure 5-8). Access to the site would be either from south off the Pacific Coast Highway or from the north through residential development. Closer evaluation of potential access to the site as described below led to the conclusion that Peña Canyon should not be considered further for potential use as a regional disposal facility.

The Pacific Coast Highway is a four lane highway (two lanes in each direction) in the vicinity of Peña Canyon. Traffic conditions along this roadway are presently severely congested and the addition of refuse truck traffic going to and from the site will exacerbate existing problems. Access from the north may be possible; however, the route would likely wind through residential areas causing significant noise and vibration impacts. Furthermore, Peña Canyon is quite distant from freeway access--access from Pacific Coast Highway would be approximately 16 miles from the Ventura (101) Freeway and approximately 13 miles from the San Diego (405) Freeway via Sunset Boulevard. Mileage to the site from the freeway system using the northern access route would be similar although much more time consuming since smaller, residential surface streets would have to be utilized. This difficulty in accessing the site would severely hinder its convenience for use as a landfill facility and therefore Peña Canyon cannot be considered a feasible alternative.

5.2.8 Sierra Madre Canyon (Little Santa Anita Canyon)

Sierra Madre Canyon is located within the Angeles National Forest north of the Foothill (210) Freeway near the City of Sierra Madre through which access to the site would be obtained (Figure 5-9). Sierra Madre Canyon is similar to Fish Canyon in that it encompasses a very large drainage area which contains highly developed riparian habitat. In addition, most of the canyon lies within the Sierra Madre Historical Wilderness Area.

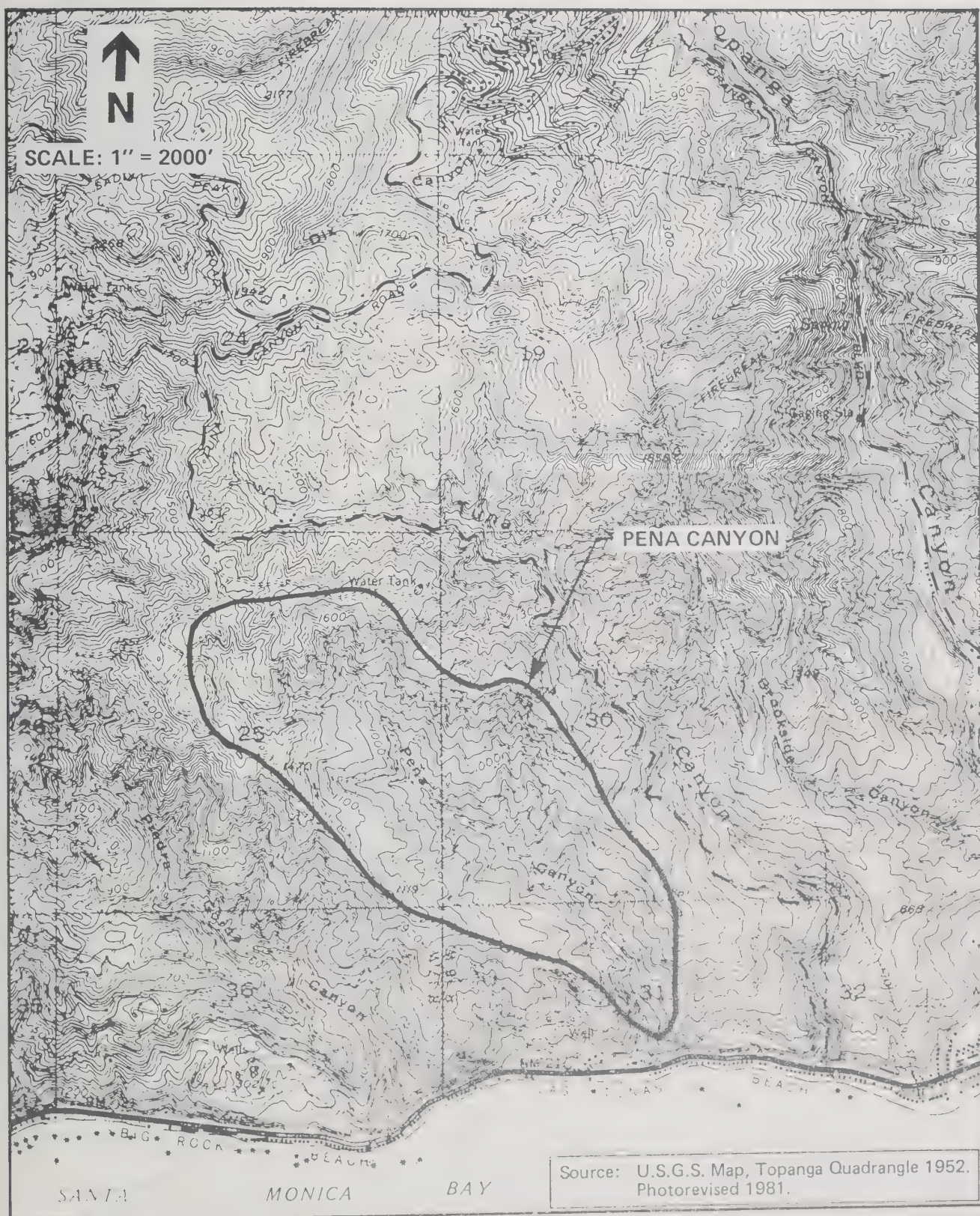


Figure 5-8 Peña Canyon Landfill Site



Figure 5-9 Sierra Madre Canyon Landfill Site

As discussed earlier, drainage areas of this size have the potential for serious flooding and erosion, making engineered drainage control extremely difficult. Also, the existence of a perennial stream has provided the canyon with a highly developed riparian habitat. Impacts to this habitat may not be mitigatable. Unavoidable noise and vibration impacts would be experienced by the residential and commercial areas through which refuse truck traffic would travel. For these reasons, Sierra Madre Canyon can be considered to be clearly environmentally inferior to sites proposed in the Program EIR and was not evaluated further.

5.2.9 Toyon Canyon II

Toyon Canyon II is located in the City of Los Angeles in the northwestern portion of Griffith Park which lies at the eastern end of the Santa Monica Mountains (Figure 5-10). Access to the project would be provided from Mount Hollywood Drive. This canyon has a capacity of 4.5 million tons and was proposed by the City of Los Angeles in 1983 in anticipation of the closure of Toyon Canyon I, but development was ultimately not pursued.

The geologic area within which Toyon Canyon II is located in the Santa Monica Mountain portion of the Transverse Ranges Geomorphic Province. This area is considered by many geologists to be tectonically active, as stated in the Toyon Canyon II EIR (1983). The EIR lists three fault zones within a reasonable distance from the site capable of generating significant ground accelerations. In addition, the EIR made reference to potential ground motion from an unnamed major fault running through the sites' main canyon. However, despite the uncertainty in geological appropriateness, the major flaw in the potential of Toyon Canyon II for use as a landfill facility is its extremely small capacity. This site could not operate a full year at a tonnage rate similar to that evaluated for the proposed sites. Thus, this site could not fulfill the objective of the project or the satisfy Action Plan goal of providing long-term disposal capacity.

5.2.10 Alternative Waste Management Technologies

Alternative waste management technologies discussed below include composting, transformation, rail transport, and use of transfer stations.

Mixed Solid Waste Composting

Composting refers to a biological process in which the organic substances of solid wastes are converted into a humus-like material, which can be used as a soil amendment.

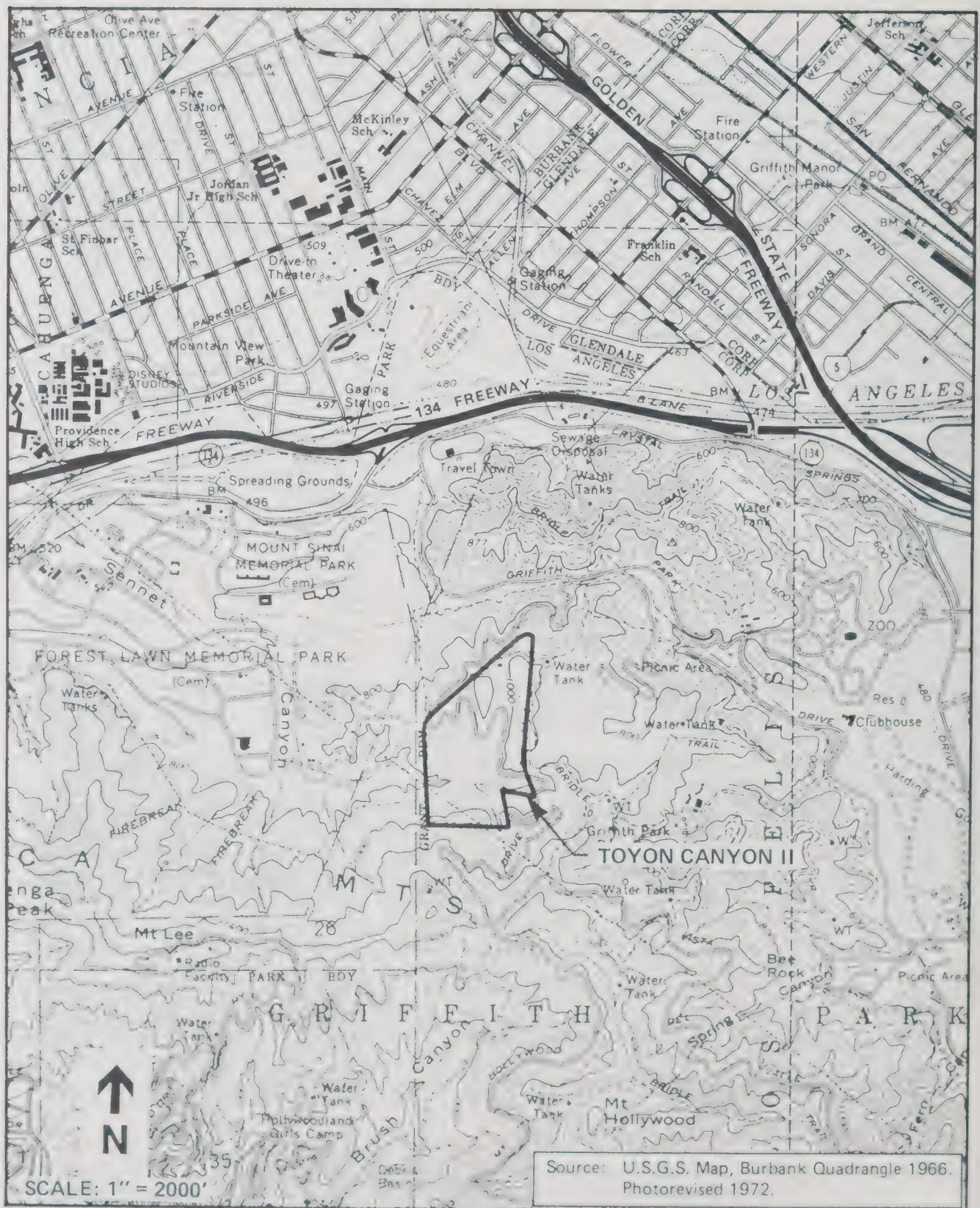


Figure 5-10 Toyon Canyon II Landfill Site

Composting projects can be material-specific, such as the green waste composting program described in Chapter 3. This discussion focuses on the use of mixed solid waste for composting. Mixed solid waste composting involves the separation and biological decomposition of the mixed organic fraction (paper, garbage, green waste) of the total waste stream. Typically, these programs handle a mixed waste stream and must include sophisticated front-end processing to remove as much as possible of the inorganic fraction of the waste, such as metal, glass, and plastic and then shred the organic waste to a size suitable for composting. Once processed, the organic material is placed in elongated rows, called windrows, or in an enclosed vessel. The windrows must be aerated either through turning the piles regularly or throughout the use of an air distribution system. Humus can be produced in 2 to 12 months, depending on the process used. Land requirements ranged from 15 acres/1,000 tons for in-vessel composting to 25 acres/1,000 tons for windrow composting.¹²³

Potential environmental impacts are associated with both the processing element and the decomposition element of solid waste composting. As discussed in Chapter 4, mixed waste processing facilities can have adverse impacts due to increases in dust, noise, and traffic. These facilities may also have adverse aesthetic impacts and increased risks of fire or vector infestation. During decomposition, air quality may be adversely impacted from release of odors resulting from anaerobic conditions which occur if the windrows are not turned regularly. Surface water quality may be affected as well if runoff from composting areas is not controlled properly.

At least six mixed solid waste composting facilities are in operation in the United States; only one of these, a plant in Wilmington, Delaware, processes more than 100 TPD.¹²⁴ The Wilmington plant has a capacity of 1,350 TPD and co-composts the waste with sewage sludge. The compost product is used for cover at a landfill. Thus, this technology has only been proven on a limited basis for large-scale operations. Feasible markets for this product may be limited, especially given the potential quantity of output if a significant portion of the metropolitan areas' organic solid wastes were composted. Compost from mixed solid waste contains small pieces of glass, plastic, and metal despite thorough processing. For most contemplated end uses, this contamination would be problematic. Many individuals may be reluctant to use compost produced from solid waste; the compost must compete with other material-specific compost which is likely to be of higher quality. The estimated cost of composting would be high, at \$40 to \$50 per ton, primarily due to capital and operating costs of the processing facility. In summary, due to large land requirements, market uncertainty, high cost and limited

operation experience, mixed solid waste composting can only be viewed as a method of waste diversion that may be explored further by individual cities in determining the appropriate methods for complying with AB 939 but will not be a feasible alternative to the proposed regional waste diversion programs and potential new landfills in the foreseeable future.

Transformation

Transformation processes discussed below include refuse-to-energy and pyrolysis.

Refuse-to-Energy. Refuse-to-energy is a transformation process where refuse is incinerated with or without preprocessing to shred the incoming waste. Units without preprocessing are referred to as mass-fired facilities. Waste processed prior to burning is referred to as refuse-derived-fuel (RDF). Refuse is typically burned at temperatures of about 2200 degrees F in waterwall boilers where thermal energy in the form of steam would be recovered. The steam would then be passed through steam turbines where the thermal energy would be converted to electricity. Refuse-to-energy processes achieve an approximate 70 percent volume reduction in the waste, ash being the only residue produced.

Environmental issues associated with a refuse-to-energy facility include potential impacts to air quality, water quality, traffic, aesthetics, and noise. The combustion of refuse to recover energy will generate emissions to the atmosphere which require that sophisticated control devices be employed. Controlled combustion, through the use of automated damper controls for air distribution, minimize NO_x and CO_x . In addition, it has been demonstrated that ammonia injection into the furnace is successful in further reducing NO_x emissions. SO_2 , hydrochloric acid (HCl), dioxins/furans, cadmium, and lead are removed at an efficiency of up to 99 percent through the use of lime treatment in a dry scrubber neutralizing the acid gases. The final stage in a typical air pollution control system at a refuse-to-energy facility is a filter baghouse which removes up to 99.95 percent of the particulate matter.

During the past decade, an interest in refuse-to-energy grew as a result of increasing opposition to landfills and a period of relatively high energy prices. State legislation was enacted in the 1980s which encouraged the development of refuse-to-energy projects. In early 1987, six municipal solid waste refuse-to-energy facilities were proposed in Los Angeles County. Additionally, two facilities had been granted operating permits. These facilities are the Commerce Refuse-to-Energy Facility (in the City of Commerce) and the Southeast Resource Recovery Facility (SERRF) in the City of Long Beach.

These plants are currently in operation. The Commerce Refuse-to-Energy Facility, which began operation in 1986, was the first of its type in the world to employ and demonstrate successful use of the innovative air pollution control strategies mentioned above. The SERRF plant, which began operation in 1989, also employs state-of-the-art air pollution control equipment. Nevertheless, a rapid change in public sentiment due to concerns over potential air quality impacts, coupled with a current energy surplus which lowers energy values to utilities, make additional implementation of refuse-to-energy facilities extremely unlikely in the near future.

It should be noted that the California Integrated Waste Management Act, AB 939, restricts the use of these facilities as a means of waste diversion (i.e., volume and weight reduction). Waste reduction resulting from current use of an existing refuse-to-energy facility, referred to as a "transformation facility" in AB 939, may not be counted as a portion of the existing waste diversion levels. In meeting the 50 percent waste diversion goal in the year 2000, not more than 10 percent diversion may be through transformation.

Pyrolysis. Pyrolysis is the chemical decomposition of organic material achieved by heating in the absence or the near absence of oxygen. The process is also called destructive or dry distillation, or carbonization. During a pyrolysis operation, municipal solid waste is shredded, fed to a reactor vessel, where it is heated to 900 degrees F to 1400 degrees F, producing a combustible gas or liquid oil and char or ash. The gas or oil may either be burned immediately or processed further and sold as fuel.

Since solid waste must be shredded prior to heating, potential environmental effects associated with the processing phase of a pyrolysis system are similar to those which may result from a mixed waste composting facility and include increases in noise, dust, traffic, and risk of fire and vector infestation. However, since the actual distillation step is in a totally enclosed environment, air quality impacts may be small.

Pyrolysis is commonly used in the petroleum industry but has limited operational experience in handling municipal solid waste. In the United States, approximately ten small demonstration and commercial pyrolysis facilities have been constructed and operated, most of which have been shut down due to operational problems or lack of fuel markets. The estimated cost for pyrolysis is about \$200 per ton.¹²³ Thus, since pyrolysis is not a proven technology for solid waste processing, it cannot be considered to be a feasible waste management alternative. In addition, AB 939 includes pyrolysis in the

definition of transformation and, thus, the use of this methodology in meeting the required waste diversion goals is extremely limited.

Waste-by-Rail Transport and Disposal System

A waste-by-rail system is actually an alternative method for solid waste transport. The waste-by-rail concept consists of the following basic components:

- **Transfer/Loading Station:** Waste would be transferred from collection trucks into containers then onto railcars at a facility located on the rail line. Alternatively, waste could also be transferred from collection trucks into containers at a facility located away from the rail line, then loaded onto trucks and transported to an existing intermodal facility where the containers would be transferred onto railcars.
- **Rail Transport:** Trains would transport the waste to a remote location, typically utilizing existing rail lines.
- **Unloading Station:** Containers would be unloaded for transport of the waste (typically by truck) the short distance to the final disposal facility.

At the end of the rail line, a landfill or refuse-to-energy facility and landfill must still be sited in order to ultimately dispose of the waste. In addition, waste diversion programs such as materials processing/separation could be easily incorporated into a waste-by-rail system.

While waste-by-rail is a concept that has generated significant interest from time to time in urban areas throughout the United States, there is actually little operating experience to review in this country. In Europe, however, Great Britain, West Germany, and the Netherlands have been successfully operating waste-by-rail systems for some time. However, the technical feasibility of accomplishing waste-by-rail has not been at issue. Rather, the social, political, and economic feasibility has been the real obstacle to the utilization of this particular waste transport and management system in this country. The substantially higher costs, and the fact that waste-by-rail invariably involves long-distance export from one political jurisdiction or region to another, have historically combined to limit implementation of waste-by-rail as a solid waste management option.

In Los Angeles County, the feasibility of waste-by-rail as a solid waste management option has been actively pursued since 1987, when the San Gabriel Valley Association of Cities (SGVAC) set up a special task force to investigate alternatives to refuse-to-energy development. In April 1988, the study "The Feasibility of Hauling Solid Waste by Railroad from the San Gabriel Valley to Remote Disposal Sites" was completed by the Southern California Associates of Governments (SCAG) with funding provided by the SGVAC, California Waste Management Board and the County of Los Angeles. After the completion of the SCAG study, the SGVAC requested the Sanitation Districts to prepare a Request for Proposals (RFP) to solicit proposals from the private sector to implement a waste-by-rail and disposal system. The Sanitation Districts with the review and input of the Solid Waste Committee of the SGVAC prepared and released an RFP for a Waste-by-Rail System in December 1988. A total of ten responses to the RFP were received and evaluated for responsiveness, technical quality, feasibility, and minimization of environmental and economical risks. During the evaluation process, a short list of proposals were compiled of those determined to be most responsive. The Sanitation Districts with the participation of the SGVAC Solid Waste Committee continues to evaluate the short list of waste-by-rail proposals with regard to project objectives, which are (1) to utilize the private sector to develop/operate the system under a full-service contract; (2) to minimize operational and financial risks for users of the system; and (3) to implement a system which is technically, environmentally, and financially sound.

At this time, the Sanitation Districts and SGVAC Solid Waste Committee are continuing to evaluate two proposals, which are summarized below:

- Waste Management, Inc., and Atchison, Topeka and Santa Fe Railway Company Joint Venture (Rail-Cycle Project):
 1. Proposed minimum capacity: 3,500 TPD.
 2. Potential transfer/loading station locations: Two stations, one in the City of Commerce, one in the City of El Segundo (see Figure 5-11).
 3. Potential unloading and disposal site locations: Near Amboy in San Bernardino County (see Figure 5-12) approximately 190 miles northeast of Whittier, California.
 4. Disposal site capacity: 200 million tons.
 5. Daily site capacity: 20,000 TPD.



Figure 5-11 Rail Transfer/Loading Sites Identified by Proposals

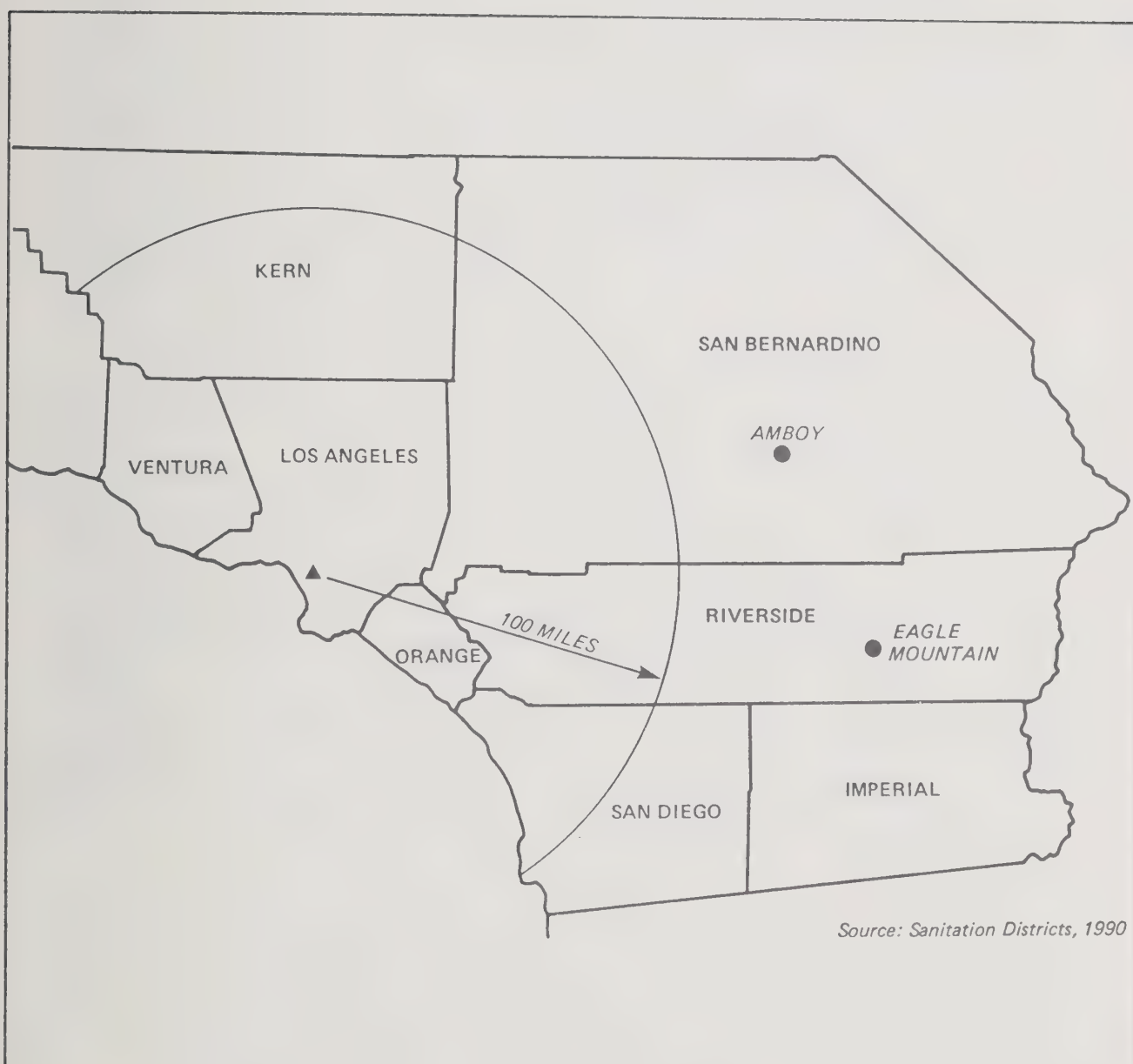


Figure 5-12 Potential Disposal Sites

- Mine Reclamation, Southern Pacific Transportation Company and Western Waste Distribution Joint Venture (Eagle Mountain Project):

1. Proposed minimum capacity: 3,500 TPD.
2. Potential transfer/loading station locations: Four stations (Irwindale, Industry, La Verne, Carson) (see Figure 5-11).
3. Potential unloading and disposal site location: Eagle Mountain in Riverside County, approximately 200 miles east of Whittier, California (see Figure 5-12).
4. Disposal site capacity: 500+ million tons.
5. Daily site capacity: 16,000 TPD by rail and 4,000 TPD by truck.

Transfer of the waste from collection vehicles to the railcars would be made either directly to containers at single or multiple rail loading stations adjacent to existing rail lines or by compacting/transferring waste first from collection trucks to containers which would then be trucked to an intermodal loading station, each weighing approximately 25 tons. Containers would be loaded onto platforms and transported by rail to the unloading station located near the ultimate disposal site. At the minimum capacity of 3,000 TPD, approximately 60 platforms or 12 cars with an overall length of approximately 3,700 feet, including engines, would be utilized as a unit train. At the unloading station, the containers would be unloaded onto transfer trailers for the trip to the working face of the landfill. The train would return to the transfer/loading station with the empty containers.

The 1988 SCAG study examined the feasibility of implementing a 5,000-TPD rail haul project specifically in the San Gabriel Valley. However, to allow proposers the maximum flexibility of being able to develop and implement a feasible project, the Sanitation Districts provided proponents the opportunity to propose sites for transfer/loading stations at whatever locations and serving whatever watershed areas in the Los Angeles County metropolitan area that they believed to be most feasible. As discussed above, potential locations have been identified on the west side of the County in El Segundo to as far east as La Verne in the San Gabriel Valley and range from new transfer/loading facilities to be built along existing rail lines to transfer facilities at existing refuse transfer stations utilizing intermodal rail loading yards.

All proposals addressing the waste management components of the waste-by-rail system were required to examine recycling and materials recovery as an integral part of the system. The two remaining proposals have incorporated materials recovery from selected commercial loads at the transfer/loading station. Both have indicated a minimum diversion rate of approximately 10 percent of the total wastestream handled at two transfer sites. Materials recovery would occur prior to compaction and loading of the waste to increase efficiency and ease of sorting. Selected commercial loads would be dumped onto the tipping floor where floor sorters would remove large or oversized items such as old corrugated containers, and wood. Loads containing large quantities of other recyclables would be moved to a waste processing line.

With the passage of AB 939, both proposers have indicated that more extensive recovery programs could be incorporated into the facilities such as buy back centers, increased processing of commercial loads and processing lines for comingled recyclables from source separated (curbside) recycling programs, however, at this time, the increased cost for this additional recycling capability has not yet been provided by the proposers to the Sanitation Districts.

Potential Environmental Impacts. The Sanitation Districts RFP process has identified potential environmental impacts associated with the implementation of a waste-by-rail system. General environmental impacts associated with the development of system components include transportation, air quality, and water resources. Specific impacts would require thorough environmental assessments of the selected components and would be identified in the formal scoping process required for each site, which would be pursued by the individual proponents.

Transportation. Primary transportation concerns are the impact of increased vehicle and rail traffic and access to the transfer/loading stations and disposal site. Refuse vehicle impacts involve the diversion of trips from existing solid waste facilities to the transfer/loading stations, and would include potential impacts to freeways, major arterials and intersections, and local streets used as access routes. The significance of these impacts would also depend on the geographical location of the transfer/loading station and the operational status of in-county solid waste disposal facilities. Rail transportation of solid waste will increase rail traffic, however, the proposed unit trains are considerably shorter than standard intermodal carriers and the additional volume would pose no significant burden on the existing rail system.

Rail transportation would also impact the surface transportation system by potentially causing delays at nonseparated grade crossings. Cumulative grade crossings delays from the loading yard to the disposal site would vary depending on the location of the loading yard and whether the trains would operate through highly urbanized areas. Grade crossings near the proposed loading yards would warrant special attention because the trains would be accelerating or decelerating as they leave or approach the loading yard. The slower train speeds could significantly affect grade crossing delays. The proposed systems involve trains operating at night and at relatively high speeds on the main lines. Therefore, delays to vehicles at grade crossings due to a waste-by-rail system would be minimal.

Air Quality. Air quality concerns center primarily from mobile and stationary sources (transfer/loading stations, rail transport, disposal site). Emissions associated with a waste-by-rail project include those from collection and transfer truck traffic to and from the loading yards, container loading and unloading equipment, unit trains for rail transport, vehicles delayed at grade crossings, materials recovery technologies at the loading yard, and emissions related to the landfill and landfill gas control system. For the case where rail transportation is compared to truck transportation over the same long-haul distance, rail transportation has been shown to be significantly less polluting. However, for the situation where the comparison is between a relatively short haul by truck and a relatively long haul by train, as is the case when comparing the use of an in-county landfill with a remote out-of-county landfill, rail transport ceases to have an emissions benefit. To illustrate this point, Table 5-4 presents a comparison of emissions from three transportation scenarios in the year 2000. Scenario 1 involves the direct haul of refuse in the collection truck to an existing landfill located 30 miles round-trip from the center of a wasteshed producing 3,000 TPD. Scenario 2 involves the use of a truck transfer station located at the center of the wasteshed to transfer refuse from collection trucks to large-capacity transfer vehicles which would then transport the waste to a new potential in-county site assumed to be located 100 miles round-trip away. Scenario 3 involves the use of a rail transfer facility at the same location but which is used to transfer waste by rail 400 miles round-trip to an out-of-county disposal site. The analysis shows that for an out-of-county site, rail transportation results in more than twice the total quantity of air pollutant emissions as compared with an in-county alternative.

Table 5-4 Emissions Comparison of Transportation Scenarios
For 3,000 Tons per Day of Refuse (Year 2000)

Scenario	Round trip miles	Emissions, tons/year					
		CO	HC	NO _x	SO _x	Part	Total
1. Direct haul (no transfer) (To existing landfill ^a)	30	36	13	56	14	2	120
2. Transfer truck ^d (To new in-county landfill ^b)	100	41	14	65	16	3	139
3. Rail transport ^d (To out-of-county landfill ^c)	400	59	42	167	26	11	305

^aAssumes 7-ton-truck capacity, 430 trips per day, and 12,900 miles per day traveled.

^bAssumes 20-ton-truck capacity, 150 trips per day, and 15,000 miles per day traveled.

^cAssumes four locomotives per train.

^dAssumes rail or truck transfer facility is located at the center of the wasteshed area.

Source: Sanitation Districts, 1990.

On the other hand, since the out-of-county disposal sites are located outside the South Coast Air Basin, not all of the rail transportation emissions would occur within the air basin. In order to more completely determine the overall air quality impact for a waste-by-rail system, the actual transfer station sites will have to be identified, along with the communities which will commit their waste. A system of strategically placed rail transfer stations could actually reduce refuse truck traffic within the basin, with a corresponding reduction in associated emissions.

Other Potential Impacts. Other potential impacts include water quality, odor, and noise issues. Water quality concerns are focused primarily on the disposal site and include protection of groundwater and surface water resources. Site specific measures would be required as conditions of permit approval. Concerns regarding odors would be minimized by good solid waste management practices at the transfer/loading and disposal sites, the use of enclosed containers for rail transport, and efficient operation of the landfill gas collection system. Noise would be a concern at the loading station and during rail transport of the wastes. The transfer/loading stations would be enclosed to minimize noise exposure at the site perimeter. Rail transport increases the noise and vibration levels in areas adjacent to the rail lines. These increases and associated mitigation measures should be evaluated in determining appropriate transport scheduling.

Obstacles to Implementation. A major obstacle for development of a waste-by rail system is the siting of new solid waste handling facilities. Remote disposal sites must meet geologic as well as geographic criteria for development. Local and county jurisdiction requirements must be satisfied along the travel route and at the off-loading station. Proposals to site new transfer/loading stations will undoubtedly be met with opposition from the surrounding residential and business communities, even though modern waste handling facilities are designed to minimize exposure to the general public and neighboring businesses.

Another obstacle to the implementation of a waste-by-rail system is the need to secure long-term waste commitments from cities in order to implement the systems. This commitment would be in the form of a "put or pay" contract in which each city would deliver the specified quantity of waste at the specified tipping fee. If a city was not able to deliver the committed quantity, it would still be required to pay the

tipping fee for the committed quantity of refuse. Waste commitments totaling a minimum of 24,000 tons per week would be necessary to implement the system.

Cost Considerations. Implementation of a waste-by-rail system will probably not change the cost of refuse collection nor the cost of ultimate disposal. Additional costs will be incurred for transporting the waste by railcar, construction of the transfer/loading and unloading facilities at each end of the system, purchasing of equipment (railcars, transport containers, etc.), operation and maintenance costs of the facilities, and the "export fee" of the local jurisdiction accepting disposal of Los Angeles County waste. The costs for implementing a waste-by-rail system will result in higher tipping fees at the transfer/loading station. Waste-by-rail proponents have indicated tipping fees of approximately \$45 to \$50 per ton (1990) compared to existing tipping costs of \$13 to \$20 per ton. Users of the waste-by-rail system would be paying higher tipping fees but would be provided with a secure waste disposal system for an extended period of time.

Transfer Stations

A transfer station is a facility where refuse collected in small vehicles can be transferred into specially designed large volume trucks which can more economically transport wastes over longer distance. The need for transfer stations is dictated by the cost of hauling wastes to the ultimate disposal location. This is directly related to the distance or time required to travel to and from the disposal site. It is apparent from the description of the function of a transfer station that this is an alternative method for transporting waste, but, is not by itself a disposal technique. The use of transfer stations would be a viable method of reducing transportation costs if distances travelled to disposal sites are lengthy, but disposal would ultimately still rely on landfilling. Implementing transfer stations would also, however, reduce transport costs, air emissions, fuel consumption, the number of collection vehicles needed, the total miles traveled, and wear on road systems. A theoretical example case can be examined to obtain an indication of these potential beneficial environmental impacts. For the transport of 1,000 TPD over a 20-mile distance, approximately 50,000 gallons of fuel per year would be conserved through the use of a transfer facility. A corresponding reduction in traffic and air emissions would be realized as well.

Despite potential beneficial environmental impacts resulting from the utilization of transfer facilities, opposition to implementation may exist. The negative reaction of a surrounding community to a proposed transfer station is a definite concern of solid waste planners. Even though modern transfer facilities are designed in a manner that favorably compares with the most contemporary industrial buildings, the negative public perception of these facilities has been one of the major obstacles to the implementation of needed transfer facilities.



CHAPTER 6

Impact Overview

CHAPTER 6

IMPACT OVERVIEW

This chapter provides a brief overview of the impacts of the Integrated Solid Waste Management System (Integrated System).

6.1 GROWTH-INDUCING IMPACTS

A project is regarded as growth-inducing if it can foster economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding environment (as defined in the State EIR Guidelines, Title 14, Chapter 3, Article 11, Sections 15125g). Included in this definition are projects which would remove obstacles to population growth. Examples of growth-inducing actions include extending urban services into a previously unserved area, extending a major roadway into a previously unserved area, and establishing major new employment opportunities. These often occur following the approval of General Plan Amendments or Sphere of Influence boundary changes.

The Integrated System for Los Angeles County is a complementary set of individual solid waste management components, which together provide a long-term responsible and effective solution to the impending solid waste disposal crisis. Through AB 939, increased recycling will be required throughout Los Angeles County to meet mandated levels by the years 1995 and 2000. The Integrated System has outlined a series of measures necessary in order to conform to state law. However, the time-to-crisis analysis has indicated that, with anticipated closure of selected landfills and continued population growth, increased recycling and expansion of existing landfills will not be adequate to accommodate the disposal needs of the County.

Waste disposal is not restricted by the availability of local landfills in the same way that sewage disposal and water supply needs must be accommodated by the local in-place systems; solid waste can be hauled to other distant areas to meet waste disposal needs. Therefore, an increase in local landfill capacity neither directly restricts nor promotes new development.

6.2 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

As noted in Chapter 4, waste diversion activities do generate impacts. While most impacts can usually be mitigated by proper siting and operational controls, substantial increases in waste diversion would result in significant increases in vehicle fuel use, air emissions, and wastewater flows from increased collection and processing of the materials.

Irreversible environmental changes associated with development of the potential landfill sites include:

1. Each of the potential landfills would alter the land form of the canyon areas.
2. The biological resources would be impacted by (a) potential loss of 54 acres of grassland/chaparral habitat containing a state listed rare plant (Blind Canyon), loss of 91 acres of riparian forest and mixed riparian (Mission-Rustic-Sullivan Canyons), loss of 9 acres of mulefat/southern willow scrub (Towsley Canyon); and (b) loss of portions of wildlife movement corridors during the operating lives of the sites (each of the sites).
3. At the present time, potentially recyclable materials are irretrievably buried in the sanitary landfill process. As discussed in this report, the Sanitation Districts are performing feasibility and research studies and implementing programs to recover energy and recyclable material from solid waste. Achieving state mandated recycling levels in the County will significantly reduce the quantity of recoverable material now being landfilled.

The sanitary landfill operations at the potential landfill sites would be in accordance with sound engineering principles. State-of-the-art control systems would be implemented to ensure that potential impacts from potential leachate or landfill gas generation would not cause environmental damage. The daily monitoring and inspection programs are proposed to ensure that environmentally damaging incidents do not occur.

6.3 SHORT-TERM USES VERSUS LONG-TERM PRODUCTIVITY

The Integrated System would provide a long-term and effective solution to the impending solid waste disposal crisis in the County. Increased recycling will conserve raw materials and reduce the loss of recyclable materials to landfill disposal. In return for use of the canyon areas as sanitary

landfills, a loss of existing natural vegetation and wildlife habitat may be experienced. Alternative uses of the canyon areas would be lost over both the near and long term. The site would remain as open space after the landfill operations have terminated.

The use of the sites for sanitary landfilling would create conditions that, if not controlled, could affect the environment in the long term. The potential for production of leachate and landfill gas are features of sanitary landfills which require control or maintenance. Methods for controlling the cumulative and potential long-term effects of sanitary landfilling exist and have been discussed at length in this report. Potential groundwater contamination would be controlled by the use of a composite liner and subsurface barrier system constructed prior to landfilling. Landfill gas provides a potentially valuable energy resource that can be recovered for many years after the waste has been buried. Methods for recovering this gas to control odor, recover energy, and prevent migration to surrounding areas have been discussed in Section 4.5.

The Integrated System would provide for (1) a long-term and effective solution to the solid waste disposal crisis in the County, (2) maintenance of a regional solid waste management system in the County, (3) guaranteed open space in perpetuity of completed landfill areas, and (4) production of sizable quantities of landfill gas suitable for energy recovery.



CHAPTER 7

Report Preparation

CHAPTER 7

REPORT PREPARATION

7.1 LEAD AGENCY - CO-SPONSOR

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Waste Diversion

Multi-Material Management & Marketing
508 Sixteenth Street, Suite 830
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Cultural and Paleontological Resources

INFOTEC Research, Inc.
425 West Fallbrook Avenue, Suite 204
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Noise

Marshall Long Acoustics
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Sherman Oaks, California 91423

Biology

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Traffic

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Superintendent, Santa Monica Mountains National
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Santa Monica Mountains National Recreation area)

State

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 Edward Heidick)
 California Polytechnic State University, Thomas Blackburn
 University of California at Los Angeles, Archaeological
 Information Center, Brian Glenn
 University of California at Berkeley, Museum of
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 California State University at Northridge, Department of
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 California Department of Parks and Recreation, Kenneth
 Collier (Planning and Local Assistance Division), Robert
 Ueltzen, Daniel C. Preece (District Superintendent,
 Santa Monica Mountains District), K. D. Leigh
 (Chief Ranger, Santa Monica Mountains District)
 California Coastal Commission, Elizabeth Chester

County-Regional

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 Los Angeles County Fire Department, Joseph Ferrara, Bruce
 Mitchell
 San Bernardino County Planning Department, Martha Sanera
 Los Angeles County Road Department, Joe Visalia
 Los Angeles County Flood Control District, Bill DePoto,
 Eric Bredeborst
 Los Angeles County Museum of National History, William
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Cities

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 Heredia, Violet Moyer
 City of Los Angeles Bureau of Sanitation, Rosalia Rojo,
 Jeffrey Dobrowolski, Kevin Delange

Cities (continued)

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 City of Simi Valley, Richard Kuhn, Joe Hinsberg
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 City of Santa Clarita Community Development Department,
 David Hogan, Chris Trinkley, John Medina
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 City of Los Angeles, Parks Department--Alonzo Carmichael,
 Ted Hey

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 Santa Clarita Water District, Ronald Klimek
 Valencia Water Company, Victor Hackney
 Southern California Water Company, David Condren
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 Shell Oil, Michael Remley, D. P. Coburn
 BKK Corporation, Ron Schwegler
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 EMCON, Ron Walder
 BFI, Frank Heerdink, Rick Spenser, Dean Wise
 Waste Management Inc., Grey Loughnane
 Richard Slade and Associates, Richard Slade
 CFS Associates, Frank Steiner
 Kennedy Jenks Chilton, Lynn Takaichi
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 DMS-Bill Miller
 Paul Edelman, Contract Biologist
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 Proler International, Jack Force
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 Zanker Resource Management, Kelly Runyan
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 Norcal Solid Waste Systems, Fred Wetzell
 California Glass Recycling Corp., Lee Wiegandt
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 Representatives of the Gabrielino and Chumash Indians
 San Fernando Valley Historical Society
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7.4 ACTION PLAN/PROGRAM EIR PUBLIC WORKSHOPS, PLANNING FOR THE "TRASH CRISIS" IN LOS ANGELES COUNTY (SUMMARY REPORT)

7.4.1 Background

Because the public has a genuine interest in the environmental, health, and financial issues associated with the development of solutions to Los Angeles County's "trash crisis," the County Sanitation Districts of Los Angeles County (Sanitation Districts) held two public workshops to consult with the interested public about these subjects. Each workshop was held on a different date and in a different area of Los Angeles County to facilitate public convenience and accessibility. Workshop No. 1 was held in La Canada/Flintridge on November 15, 1989; Workshop No. 2 was held in Torrance on November 16, 1989.

The specific objectives of the workshops were to:

1. Inform the interested public about the impending "trash crisis" facing the metropolitan area of Los Angeles County;
2. Present information about the Solid Waste Management Action Plan (Action Plan) and the Program EIR on the Integrated Solid Waste Management System (Integrated System) to prevent the crisis;
3. Outline the scope of the Program Environmental Impact Report (EIR) being prepared by the Sanitation Districts to evaluate the potential environmental effects on the Integrated System;
4. Obtain input from the public regarding the "trash crisis" and the proposed Integrated System including its specific components (i.e., waste diversion, and landfilling); and
5. Use the feedback gathered via the two workshops to help ensure that all pertinent issues and concerns are addressed in the Program EIR and to guide the County and the Sanitation Districts in the overall solid waste planning and decision-making process.

The combined attendance for the two workshops was two hundred forty-seven (247) people--one hundred twenty-one (121) at Workshop No. 1 and one hundred twenty-six (126) at Workshop No. 2. Outreach and notification activities prior to the workshops consisted of (1) direct mail notification to approximately 12,000 parties including public officials, private organizations and community groups; (2) quarter-page

newspaper advertisements in the Los Angeles Times and six other daily newspapers serving Los Angeles County; and (3) follow-up telephone calls to selected individuals and organizations prior to the workshops.

Both workshops were conducted using the same format. After a slide presentation describing the "trash crisis" and the Integrated System being proposed to avert it, the attendees caucused in small groups to discuss and evaluate a number of key solid waste management issues and topics. After concluding these discussions, each group reported its findings to everyone attending the workshop. This report presents a summary of discussion topics and responses.

7.4.2 Discussion Guide Topics and Responses

Question

1.a. Which waste diversion methods do you think would have the best chance for success on a Countywide basis in Los Angeles County?

- Source reduction (i.e., changing manufacturing and packaging practices through legislation)
- Residential recycling
- Commercial recycling
- Composting
- Refuse-to-energy

Summary of Responses. Although all of the above options had both proponents and opponents, the majority of the workshop groups believed that source reduction, and residential and commercial recycling had the greatest potential for success in Los Angeles County. In addition, most groups cited education as a key to the success of these programs and reported that legislation must play an important role.

Program EIR Reference. The Program EIR will address the environmental impacts of the proposed Integrated System, of which waste diversion is the fundamental component. The proposed approach will include implementation of the maximum amount of waste diversion feasible, in compliance with AB 939, California Integrated Waste Management Act. Within the waste diversion component, source reduction will be given essential priority, consistent with the hierarchy mandated in AB 939. Various options will be evaluated for both source reduction and residential and commercial recycling. This analysis will include a study of markets which are available for supporting these activities. In addition, current ongoing involvement in the legislative process and development of educational programs

to further these priorities will be discussed. An analysis will be presented which depicts the extent to which the waste diversion component will be able to avert the disposal crisis.

Question

- 1.b. Should these waste diversion methods be implemented without regard to cost?

Summary of Responses. Most of the groups reported that economic incentives are necessary for the success of waste diversion methods. The prevalent opinion was that true waste management costs should be passed on to producers and be proportionate to the amount produced, thereby encouraging source reduction and recycling. It was recognized that subsidies may be necessary until markets are adequately developed.

Program EIR Reference. As mentioned earlier, the Program EIR will outline various options for waste diversion. The discussion will include encouragement and support for source reduction methods such as a "per can" refuse collection fee. In addition, the market study will identify specific actions which will be necessary for market development required to achieve identified diversion goals.

Question

2. What do you think are the most important factors that should be considered in siting disposal facilities to solve Los Angeles County's trash crisis? Please try and rank these in their order of importance. (You may want to consider some of the following factors in your discussion. Try to provide specific reasons for your choice.)
 - Distance from waste source (more remote sites will cost more)
 - Environmental impacts (air, water, land)
 - Distance from major transport routes (ease of access)
 - Financial cost to rate payers
 - Potential years of disposal service

- Potential transport truck traffic impact on local highways
- Benefit to host community

Summary of Responses. All groups felt that environmental impact was the most important factor in siting a new disposal facility. Most groups also felt that years of service and economics were next in importance. In answering this question, the issue of equity and potential alternatives were raised, as to whether or not the County and the Sanitation Districts were adequately considering alternatives to landfilling.

Program EIR Reference. The objective of the Program EIR is to evaluate environmental impacts of the proposed Integrated System, which is comprised of waste diversion programs and adequate landfill capacity. Environmental impact will be evaluated in the Program EIR for the following areas:

Land Use
Geology, Soils and Water Resources
Biological Resources
Traffic
Air Quality
Odor
Noise and Vibration
Public Health and Safety
Cultural Resources
Public Service and Utilities

The Action Plan/Program EIR is aimed at providing a balanced, well-distributed solid waste management system, as far as it is feasible and environmentally sound. To further address this issue, the Program EIR will contain a thorough and complete analysis of alternatives to the proposed Integrated System elements. The analysis will encompass alternative technologies (e.g., waste-by-rail, municipal solid waste composting), alternative disposal sites and alternative Integrated System element combinations. The potential environmental impacts of the alternatives, as well as those of the No Project Alternative, will be evaluated. The treatment of alternatives analysis is intended to be adequate to facilitate responsible decision-making regarding the implementation of the integrated system.

Question

3. If new landfills are developed to serve Los Angeles County, they will be in what some people consider their "backyard." Even though there are established methods to mitigate the potentially adverse impacts,

are there additional ways to make this outcome more acceptable to the potentially affected parties? What do you think would make this situation more acceptable to you, if it were your "backyard" that was involved?

Summary of Responses. While most of the groups reported that landfilling should be minimized or eliminated, it was recognized that the need exists for disposal capacity. Several measures were presented to make these facilities more acceptable including buffer zones, tipping fee royalties, communities facilities such as sports fields and parks, careful permitting, and a thorough environmental review process to ensure environmental integrity. Two additional solid waste management methods were suggested for reducing potential impacts from landfills: increased use of transfer stations to reduce traffic impacts, and the implementation of a waste-by-rail system to utilize remote landfill sites

Program EIR Reference. As mentioned above, the proposed Integrated System is one which advocates maximum waste diversion while providing adequate disposal capacity. An analysis will be presented in the Program EIR which demonstrates that even with very aggressive waste diversion programs, additional disposal capacity is required. The proposed potential landfill sites have been selected following a comprehensive site study which evaluated over 100 locations. One criterion in ranking the sites was remoteness from populated areas. The total proposed site acreages encompass an area 3 to 5 times the actual fill areas, providing a significant buffer zone. For example, the total proposed property acreage for Towsley Canyon is approximately 3,000 acres, with the fill area occupying only 700 acres.

The use of waste-by-rail and transfer stations are two waste management methods evaluated in the alternatives analysis of the Program EIR. Information received from private proponents through a Request-for-Proposals process conducted by the Sanitation Districts will be summarized. An analysis will be presented depicting an Integrated System which includes waste-by-rail as a component. The use of transfer stations will be evaluated regarding positive and negative environmental impacts. Although not a disposal method in itself, the effective use of transfer stations can be considered an important element of a balanced Integrated System, providing an opportunity for recycling to take place and reductions in truck mileage and emissions from collection vehicles

The workshops were presented as a means to provide information to the public on the Solid Waste Action Plan and the Program EIR, and to solicit input regarding issues of

concern which should be addressed in the report. Further input will be obtained during the public review period for the Draft Program EIR. Undoubtedly, public and agency review are essential for the implementation of such an important project, namely a responsible, countywide waste management system.

Question

4. If new trash disposal facilities are developed to meet Los Angeles County's needs, do you think they should be publicly or privately operated? What are your views on the advantages and disadvantages of each?

Summary of Responses. Group reports indicated mixed responses and opinions as to whether landfills should be publicly or privately operated. However, all groups emphasized that, in all cases, disposal facilities must be run efficiently and cost-effectively, government regulations must be enforced, and operators must be held accountable for the long-term environmental soundness of the site. It was also noted that disposal facilities should encourage and support recycling, as well as meet waste management needs of the County

Program EIR Reference. The Program EIR is a document for environmental evaluation of the proposed Integrated System and, therefore, does not address the issue of public versus private operations per se. However, the Action Plan does call for the support of solid waste management in Los Angeles County by a reasonable balance of public and private operations and facilities, including a regional public landfill system, for use through public, private or joint venture operations as appropriate.

The Sanitation Districts' operated facilities encourage recycling through a variety of programs which are also proposed for the potential new landfill sites. One of these programs is a green waste cover/compost program. Incentive is given to cities to implement separate collection of green waste (i.e., yard and garden waste) through a discounted tipping fee at the disposal facility. The green waste would be shredded on site and either composted or used as interim cover, preserving both fill volume and soil, which would otherwise be excavated from native ridges for this purpose. This program and others proposed will be discussed in detail in the Program EIR.

7.4.3 Summary

Two workshops were held to inform the public about the Solid Waste Management Action Plan and the Program EIR and to receive input from the public regarding the proposed project.

The responses have been summarized above, and these concerns will be addressed in the Program EIR. The Draft Program EIR is expected to be released for a 60-day review period in the near future. A Notice of Completion will be sent to all persons, organizations, and agencies on the mailing list.

7.4.4 Workshop Attendance

The following community groups and private organizations attended one or both of the public workshops:

American Waste Removal
 Ampex Corporation
 Anderson Tree
 Angelica Health Care Services Group
 Baxter Pharmacology
 Bel Aire Knolls Property Owners Association
 Bestway Recycling
 BFI Waste Systems
 Big Sky Ranch
 Bob's Generator Shop
 Brown and Caldwell
 C&M/Lummus West
 C.A. Rasmussen
 CADRE (Citizens Against Dumping in Residential
 Environments)
 California Disposal Association
 Cambodian Association of America
 Citizens Environmental Task Force
 Citizens for A Better Environment
 City Wide Service, Inc.
 Clegg Engineering
 CMRR/TVMWD
 Communities United for Safe Trash Management
 Community Health Coalition
 Concerned Citizens of South Central Los Angeles
 Continental Development Corporation
 Crown Disposal
 E.E. Rolloff Services
 Earthwatch
 Emcon Associates
 The Simi Valley Enterprise
 Finch & Associates
 Foundation for Resource Conservation
 Foundation for the Preservation of the Santa Susan
 Mountains
 Friends of Caballero Canyon
 Friends of Santa Monica Mountains, Parks & Seashore
 Greenfield Environmental Services
 Greisen Construction
 Grey Panthers

Grobecker Associates
Hacienda Heights Improvement Association
Hood Corporation
Huntway Refining Company Intercity Greens
J.L. Vignes Ranch
Jacobs Engineering
Jesse Owens Boys Club
Kagel Canyon Civil Association
Lakeview Terrace Improvement Association
Lakeview Terrace Property Owners Association
Latham & Watkins
League of Women Voters
Long Beach Rubbish and Disposal
Lopez Landfill vs. Composting
Los Angeles Environmental Directory
M.R. Chasse Company
Meyers Landscaping
Moine Brothers, Inc.
Monterey Park Recycling Task Force
Myra L. Frank & Associates
Pacific Building Interiors
Pacific West Communications
Plastic Re-source
Plunkett Construction
Ray's Recycling, Inc.
Resource Energy (Co-op Residential Recycling)
Roof Tear Off Specialists
Santa Monica Mountains Conservancy
Santa Susana Mountains Park Association
San Gabriel Valley Tribune
Sierra Club
Sierra Madre Environmental Action Council
Signal Hill Disposal
Simi Realtors
St. Francis Medical Center
SWIG
Taxpayers Revolt
The TreePeople
The Daily Breeze
The Refuse News
Twin Lake Home Owners Association
United Citizens of United American, Inc.
Upper Mandeville Canyon Association
Verdugo Hills Group
West Hills Community Organization
West Trucking
Western Disposal Co.
Westlock Corporation
Wilmington Homeowners Association
Waste Management of North America, Inc.

The following public agencies, public advisory bodies and municipalities attended one or both of the public workshops:

Angeles National Forest
 Assemblyman Felando's Office
 Cerritos College
 City of Agoura Hills
 City of Beverly Hills
 City of Carson, Community Development Department
 City of Carson, Office of Public Safety
 City of Glendale
 City of Hawthorne
 City of La Mirada
 City of Lancaster
 City of Long Beach
 City of Los Angeles, Bureau of Sanitation
 City of Los Angeles, Sanitation Department
 City of Los Angeles, Solid Waste Citizens Advisory Group
 City of Palmdale
 City of Pasadena
 City of Rosemead
 City of Simi
 City of South Gate
 City of Torrance
 City of Torrance, Refuse Division
 County of Los Angeles, Department of Health Services
 County of Los Angeles, Department of Public Works
 Department of Political Science, California State
 University at Long Beach
 LaPierce College - California State University, Northridge
 Long Beach Solid Waste and Recycling Advisory Committee
 Los Angeles County Agricultural Commission for Weights
 and Measures
 Los Angeles County Arboretum
 Los Angeles County Probation Department
 Los Angeles County Solid Waste Management Planning
 Committee
 Metropolitan Water District
 Port of Long Beach, California
 Rancho Simi Park & Recreation District
 San Gabriel Water Master
 Southern California Coastal Waters Research Project
 (SCCWRP)
 University of California at Los Angeles, Solid Waste
 Program

The following staff and consultants of the Sanitation Districts participated in the public workshops:

Steve Maguin, Head, CSDLAC Solid Waste Management
 Department

Donald Nellor, Planning and Engineering Section Head,
Sanitation Districts Solid Waste Management Department

Grace Chan, Supervising Engineer, Sanitation Districts
Solid Waste Management Department

Janet Coke, Project Engineer, Sanitation Districts Solid
Waste Management Department

Joe Haworth, Director, Sanitation Districts Office of
Information Services

Gary Robbins, General Partner, Urban Alternative (Public
Participation Consultant)

James Marks, Associate Consultant, Urban Alternatives
(Public Participation Consultant)

Sharon Peeler, Associate Consultant, Urban Alternatives
(Public Participation Consultant)

7.4.5 Focus Group

The focus group was designed to gain input from interested citizens, hauling industry representatives, waste industry officials and environmental and community groups. Participants included:

Mark Abramowitz (Coalition for Clean Air), Allen Arata (Sierra Club) Debra Baine (Santa Monica Recycle), Richard Paxman (TOPAX) (trash hauling company), James Provenzano (Citizens for a Better Environment), Jill Ratner (Citizens for a Better Environment), Ingrid Markul (League of Women Voters), Joe Haworth (Sanitation Districts).

7.4.6 Citizens Solid Waste Environmental Advisory Committee

Allen Arata, Chairman
Debra Baine
Eugene N. Garcia
John Licari
Bill Neill
Hazel Scotto
Wanda Sterner
Elsie Withey, Vice Chairwoman
Gary Petersen
David Ross
Ingrid Markul



APPENDICES

APPENDIX A

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REFERENCES

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APPENDIX B
TIME-TO-CRISIS

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TIME-TO-CRISIS

General Assumptions

- a. The initial recent historical trend reflects the total tonnage received in 1990 which is increased annually at a rate of 2.5 percent until the year 2000 which accounts for a 1.0 percent increase in population and 1.5 percent increase in per capita generation; from the year 2000 until the end of the 25 year period the trend increases only according to population growth.
- b. Although sites may be permitted for a particular daily maximum tonnage limit, for planning purposes maximum Historic Operational Rates (HOR) and/or Expansion Operational Rates (EOR) have been assumed and are noted where these rates do not agree with permitted limits. The HOR represents the tonnage limit at which a site has normally operated in the past. The EOR represents the projected limit at which a site subsequent to expansion could be restricted to.

Site Specific Assumptions

- a. Azusa Land Reclamation: Adjusted to reflect changes in Waste Discharge Requirements. Permitted daily tonnage capacity = 6,500 tpd-6. HOR/EOR - 3,000 tpd-6.
- b. BKK: Operations cease in November 1995 (latest year possible under agreement with City of West Covina). Maximum daily tonnage capacity 10,000 tpd-6.
- c. Bradley West: Existing tonnage limit under Waste Discharge Requirements = 7,000 tpd-6. Land Use Permit expires December 29, 1993. HOR/EOR - 3,000 tpd-6.

- d. Calabasas: Operational limit of 3,500 tpd-6.
- e. Chiquita Canyon: 5,000 tpd is permitted 7 days/week, 365 days per year. This is equivalent to approximately 6,000 tpd-6, LUP expires November 24, 1997.
- f. Lopez Canyon: Limited to waste generated in the City and collected by City's crews (Bureau of Sanitation, Bureau of Street Maintenance, etc.). Maximum daily tonnage capacity = 4,000 tpd-6. LUP expires 1994.
- g. Scholl Canyon City of Glendale limits use of site. Maximum daily tonnage capacity = 3,500 tpd-6. Accepts only waste generated in the cities of Glendale, San Marino, Sierra Madre, La Canada-Flintridge, South Pasadena and Pasadena and certain areas of the unincorporated county territories identified as Altadena, East Pasadena, La Crescenta and Montrose.
- h. Spadra: Limited by LUP to 18,000 tons per week through June 30, 1995 and to 15,000 tons per week thereafter. This is equivalent to daily tonnage 3,000 tpd-6 through 6-30-95 and 2,500 tpd-6 thereafter. LUP expires May 1, 2010.
- i. Sunshine Canyon: Daily tonnage under Solid Waste Facility Permit = 7,000 tpd-6. LUP expires May 25, 1991. EOR - 8,000 tpd-6.

- j. Puente Hills: Limited by LUP to 72,000 tons per week. This is equivalent to a 12,000 tpd-6 daily tonnage limit as specified by the LUP (accept no refuse generated in the City of Los Angeles that is outside of County Sanitation Districts jurisdiction). LUP expires October 31, 1993. EOR 12,000 (1993-1996) 10,000 tpd-6 (1997); 8,000 tpd-6 (1998-1999); 6,000 tpd-6 (2,000+).

SCENARIO DESCRIPTIONS

- a. No Project
- Sites operate until capacities are exhausted or permits expire. There is no increase in waste diversion over the current level assumed to be within a range of 0-25 percent of the waste generated in the County.
- b. Maximum Increase in Waste Diversion
- Diversion efforts are linearly increased according to state mandates (AB 939) which calls for a maximum rate of 50 percent by the year 2000 beginning with an initial assumed rate of 10 percent in the year 1990.
- c. Site Expansions and Maximum Increase in Waste Diversion
- Sites with expansion capabilities are permitted and diversion efforts are linearly increased according to state mandates (AB 939) which calls for a maximum rate of 50 percent by the year 2000.
- d. Integrated Waste Management System
- Sites with expansion capabilities are permitted; diversion efforts are linearly increased according to state mandates (AB 939) which calls for a maximum rate of 50 percent by the year 2000; and four new sites are permitted: Elsmere, Blind, Towsley and Mission-Rustic-Sullivan, each at maximum rates of 16,500 tpd-6. Long haul is a consideration for possible future disposal needs.

TIME-TO-CRISIS ANALYSIS

Expected daily tonnage, 6 day average (tpd-6)
Remaining Landfill Capacity at Year's end, Million Tons

Year	Waste Generation Rate	Waste Quantity Recycled	Recycle Rate	Disposal Rate	Puente var.	Spadra var.	BKK 10,000 (1990)	Azusa 3,000 (1991)	Scholl 2,500 (1990)	Bradley 3,000 (1991)	Lopez 4,000 (1990)	Sunshine 8,000 (1990)	Chiquita 6,000 (1991)	Calabassas 3,500 (1991)	Waste Mgmt. Shortfall
1990	63,100	15,800	25.0	47,300	12,000 11.6	3,000 7.4	10,000 15.4	2,200 35.4	2,500 13.7	2,800 9.9	4,000 2.5	6,000 1.3	2,000 2.2	2,800 16.5	0
1991	64,700	16,200	25.0	48,500	12,000 7.9	3,000 6.5	10,000 12.3	3,000 34.5	2,500 12.9	3,000 9.0	4,000 1.3	0 0.0	6,000 0.4	3,500 15.4	1,500
1992	66,300	16,600	25.0	49,700	12,000 4.2	3,000 5.5	10,000 9.2	3,000 33.6	2,500 12.2	3,000 8.1	4,000 0.1	0 0.0	0 0.0	3,500 14.3	8,700
1993	68,000	17,000	25.0	51,000	0 0.0	3,000 4.6	10,000 6.2	3,000 32.6	2,500 11.4	0 8.1	0 0.0	0 0.0	0 0.0	3,500 13.3	29,000
1994	69,700	17,400	25.0	52,300	0 0.0	3,000 3.7	10,000 3.1	3,000 31.7	2,500 10.6	0 8.1	0 0.0	0 0.0	0 0.0	3,500 12.2	30,300
1995	71,300	17,800	25.0	53,500	0 0.0	2,800 2.8	0 0.0	3,000 30.8	2,500 9.9	0 8.1	0 0.0	0 0.0	0 0.0	3,500 11.1	41,700
1996	73,200	18,300	25.0	54,900	0 0.0	2,500 2.0	0 0.0	3,000 29.9	2,500 9.1	0 8.1	0 0.0	0 0.0	0 0.0	3,500 10.0	43,400
1997	74,900	18,700	25.0	56,200	0 0.0	2,500 1.3	0 0.0	3,000 28.9	2,500 8.3	0 8.1	0 0.0	0 0.0	0 0.0	3,500 9.0	44,700
1998	76,900	19,200	25.0	57,700	0 0.0	2,500 0.5	0 0.0	3,000 28.0	2,500 7.5	0 8.1	0 0.0	0 0.0	0 0.0	3,500 7.9	46,200
1999	78,800	19,700	25.0	59,100	0 0.0	0 0.0	0 0.0	3,000 27.1	2,500 6.8	0 8.1	0 0.0	0 0.0	0 0.0	3,500 6.8	50,100
2000	80,800	20,200	25.0	60,600	0 0.0	0 0.0	0 0.0	3,000 26.2	2,500 6.0	0 8.1	0 0.0	0 0.0	0 0.0	3,500 5.7	51,600
2001	82,800	20,700	25.0	62,100	0 0.0	0 0.0	0 0.0	3,000 25.2	2,500 5.2	0 8.1	0 0.0	0 0.0	0 0.0	3,500 4.6	53,100
2002	84,900	21,200	25.0	63,700	0 0.0	0 0.0	0 0.0	3,000 24.3	2,500 4.5	0 8.1	0 0.0	0 0.0	0 0.0	3,500 3.6	54,700
2003	86,900	21,700	25.0	65,200	0 0.0	0 0.0	0 0.0	3,000 23.4	2,500 3.7	0 8.1	0 0.0	0 0.0	0 0.0	3,500 2.5	56,200
2004	89,200	22,300	25.0	66,900	0 0.0	0 0.0	0 0.0	3,000 22.5	2,500 2.9	0 8.1	0 0.0	0 0.0	0 0.0	3,500 1.4	57,900

Year	Waste Generation Rate	Waste Quantity Recycled	Recycle Rate	Disposal Rate	Puente var.	Spadra var.	BKK 10,000 (1990)	Azusa 3,000 (1991)	Scholl 2,500 (1990)	Bradley 3,000 (1991)	Lopez 4,000 (1990)	Sunshine 8,000 (1990)	Chiquita 6,000 (1991)	Calabasas 3,500 (1991)	Waste Mgmt. Shortfall
2005	91,300	22,800	25.0	68,500	0 0.0	0 0.0	0 0.0	3,000 21.5	2,500 2.2	0 8.1	0 0.0	0 0.0	0 0.0	3,500 0.3	59,500
2006	93,700	23,400	25.0	70,300	0 0.0	0 0.0	0 0.0	3,000 20.6	2,500 1.4	0 8.1	0 0.0	0 0.0	0 0.0	0 0.0	64,800
2007	96,000	24,000	25.0	72,000	0 0.0	0 0.0	0 0.0	3,000 19.7	2,500 0.6	0 8.1	0 0.0	0 0.0	0 0.0	0 0.0	66,500
2008	98,400	24,600	25.0	73,800	0 0.0	0 0.0	0 0.0	3,000 18.8	0 0.0	0 8.1	0 0.0	0 0.0	0 0.0	0 0.0	70,800
2009	100,900	25,200	25.0	75,700	0 0.0	0 0.0	0 0.0	3,000 17.8	0 0.0	0 8.1	0 0.0	0 0.0	0 0.0	0 0.0	72,700
2010	103,300	25,800	25.0	77,500	0 0.0	0 0.0	0 0.0	0 17.8	0 0.0	0 8.1	0 0.0	0 0.0	0 0.0	0 0.0	77,500
2011	106,000	26,500	25.0	79,500	0 0.0	0 0.0	0 0.0	0 17.8	0 0.0	0 8.1	0 0.0	0 0.0	0 0.0	0 0.0	79,500
2012	108,500	27,100	25.0	81,400	0 0.0	0 0.0	0 0.0	0 17.8	0 0.0	0 8.1	0 0.0	0 0.0	0 0.0	0 0.0	81,400
2013	111,300	27,800	25.0	83,500	0 0.0	0 0.0	0 0.0	0 17.8	0 0.0	0 8.1	0 0.0	0 0.0	0 0.0	0 0.0	83,500

EFFECT OF
MAXIMUM INCREASE IN WASTE DIVERSION
ON TIME-TO-CRISIS ANALYSIS

Expected daily tonnage, 6 day average (tpd-6)
Remaining Landfill Capacity at Year's End, Million Tons

Year	Waste Generation Rate	Waste Quantity Recycled	Recycle Rate	Disposal Rate	Puente var.	Spadra var.	BKK 10,000 (1990)	Azusa 3,000 (1991)	Scholl 2,500 (1990)	Bradley 3,000 (1991)	Lopez 4,000 (1990)	Sunshine 8,000 (1990)	Chiquita 6,000 (1991)	Calabassas 3,500 (1991)	Waste Mgmt. Shortfall
1990	52,600	5,300	10.0	47,300	12,000 11.6	3,000 7.4	10,000 15.4	2,200 35.4	2,500 13.7	2,800 9.9	4,000 2.5	6,000 1.3	2,000 2.2	2,800 16.5	0
1991	53,900	7,000	13.0	46,900	12,000 7.9	3,000 6.5	10,000 12.3	2,900 34.5	2,500 12.9	3,000 9.0	4,000 1.3	0 0.0	6,000 0.4	3,500 15.4	0
1992	55,200	8,800	16.0	46,400	12,000 4.2	3,000 5.6	10,000 9.2	3,000 33.6	2,500 12.2	3,000 8.1	4,000 0.1	0 0.0	0 0.0	3,500 14.3	5,400
1993	56,600	10,800	19.0	45,800	0 0.0	3,000 4.6	10,000 6.2	3,000 32.7	2,500 11.4	0 8.1	0 0.0	0 0.0	0 0.0	3,500 13.3	23,800
1994	58,000	12,800	22.0	45,200	0 0.0	3,000 3.7	10,000 3.1	3,000 31.7	2,500 10.6	0 8.1	0 0.0	0 0.0	0 0.0	3,500 12.2	23,200
1995	59,500	14,900	25.0	44,600	0 0.0	2,800 2.8	0 0.0	3,000 30.8	2,500 9.9	0 8.1	0 0.0	0 0.0	0 0.0	3,500 11.1	32,800
1996	61,000	18,300	30.0	42,700	0 0.0	2,500 2.1	0 0.0	3,000 29.9	2,500 9.1	0 8.1	0 0.0	0 0.0	0 0.0	3,500 10.0	31,200
1997	62,500	21,900	35.0	40,600	0 0.0	2,500 1.3	0 0.0	3,000 29.0	2,500 8.3	0 8.1	0 0.0	0 0.0	0 0.0	3,500 9.0	29,100
1998	64,100	25,600	40.0	38,500	0 0.0	2,500 0.5	0 0.0	3,000 28.0	2,500 7.5	0 8.1	0 0.0	0 0.0	0 0.0	3,500 7.9	27,000
1999	65,700	29,600	45.0	36,100	0 0.0	0 0.0	0 0.0	3,000 27.1	2,500 6.8	0 8.1	0 0.0	0 0.0	0 0.0	3,500 6.8	27,100
2000	67,300	33,700	50.0	33,600	0 0.0	0 0.0	0 0.0	3,000 26.2	2,500 6.0	0 8.1	0 0.0	0 0.0	0 0.0	3,500 5.7	24,600
2001	68,000	34,000	50.0	34,000	0 0.0	0 0.0	0 0.0	3,000 25.3	2,500 5.2	0 8.1	0 0.0	0 0.0	0 0.0	3,500 4.6	25,000
2002	68,700	34,400	50.0	34,300	0 0.0	0 0.0	0 0.0	3,000 24.3	2,500 4.5	0 8.1	0 0.0	0 0.0	0 0.0	3,500 3.6	25,300
2003	69,400	34,700	50.0	34,700	0 0.0	0 0.0	0 0.0	3,000 23.4	2,500 3.7	0 8.1	0 0.0	0 0.0	0 0.0	3,500 2.5	25,700
2004	70,100	35,100	50.0	35,000	0 0.0	0 0.0	0 0.0	3,000 22.5	2,500 2.9	0 8.1	0 0.0	0 0.0	0 0.0	3,500 1.4	26,000

Year	Waste Generation Rate	Waste Quantity Recycled	Recycle Rate	Disposal Rate	Puente var.	Spadra var.	8KK 10,000 (1990)	Azusa 3,000 (1991)	Scholl 2,500 (1990)	Bradley 3,000 (1991)	Lopez 4,000 (1990)	Sunshine 8,000 (1990)	Chiquita 6,000 (1991)	Calsbasas 3,500 (1991)	Waste Mgmt. Shortfall
2005	70,800	35,400	50.0	35,400	0 0.0	0 0.0	0 0.0	3,000 21.6	2,500 2.2	0 8.1	0 0.0	0 0.0	0 0.0	3,500 0.3	26,400
2006	71,500	35,800	50.0	35,700	0 0.0	0 0.0	0 0.0	3,000 20.6	2,500 1.4	0 8.1	0 0.0	0 0.0	0 0.0	0 0.0	30,200
2007	72,200	36,100	50.0	36,100	0 0.0	0 0.0	0 0.0	3,000 19.7	2,500 0.6	0 8.1	0 0.0	0 0.0	0 0.0	0 0.0	30,600
2008	72,900	36,500	50.0	36,400	0 0.0	0 0.0	0 0.0	3,000 18.8	0 0.0	0 8.1	0 0.0	0 0.0	0 0.0	0 0.0	33,400
2009	73,600	36,800	50.0	36,800	0 0.0	0 0.0	0 0.0	3,000 17.9	0 0.0	0 8.1	0 0.0	0 0.0	0 0.0	0 0.0	33,800
2010	74,300	37,200	50.0	37,100	0 0.0	0 0.0	0 0.0	0 17.9	0 0.0	0 8.1	0 0.0	0 0.0	0 0.0	0 0.0	37,100
2011	75,000	37,500	50.0	37,500	0 0.0	0 0.0	0 0.0	0 17.9	0 0.0	0 8.1	0 0.0	0 0.0	0 0.0	0 0.0	37,500
2012	75,800	37,900	50.0	37,900	0 0.0	0 0.0	0 0.0	0 17.9	0 0.0	0 8.1	0 0.0	0 0.0	0 0.0	0 0.0	37,900
2013	76,600	38,300	50.0	38,300	0 0.0	0 0.0	0 0.0	0 17.9	0 0.0	0 8.1	0 0.0	0 0.0	0 0.0	0 0.0	38,300

EFFECT OF
MAXIMUM INCREASE IN WASTE DIVERSION AND SITE EXPANSIONS
ON TIME-TO-CRISIS ANALYSIS

Expected daily tonnage, 6 day average (tpd-6)
 Remaining Landfill Capacity at Year's End, Million Tons

Year	Waste Generation Rate	Waste Quantity Recycled	Recycle Rate	Disposal Rate	Puente var.	Spadra var.	8KK 10,000 (1990)	Azusa 3,000 (1990)	Scholt 2,500 (1990)	Bradley 3,000 (1990)	Lopez 4,000 (1990)	Sunshine 8,000 (1990)	Chiquita 6,000 (1991)	Calabasas 3,500 (1991)	Waste Mgmt. Shortfall
1990	52,600	5,300	10.0	47,300	12,000 11.6	3,000 7.4	10,000 15.4	2,200 35.4	2,500 13.7	2,800 9.9	4,000 2.5	6,000 1.3	2,000 2.2	2,800 16.5	0
1991	53,900	7,000	13.0	46,900	12,000 7.9	3,000 6.5	10,000 12.3	3,000 34.5	2,500 12.9	3,000 9.0	4,000 1.3	3,900 215.1*	2,000 1.6	3,500 15.4	0
1992	55,200	8,800	16.0	46,400	12,000 4.2	3,000 5.6	10,000 9.2	3,000 33.6	2,500 12.2	3,000 8.1	4,000 15.0*	3,400 214.1	2,000 31.0*	3,500 14.3	0
1993	56,600	10,800	19.0	45,800	12,000 70.5*	3,000 4.6	10,000 6.2	3,000 32.6	2,500 11.4	3,000 7.1*	4,000 13.8	2,800 213.2	2,000 30.4	3,500 13.3	0
1994	58,000	12,800	22.0	45,200	12,000 66.8	3,000 3.7	10,000 3.1	3,000 31.7	2,500 10.6	3,000 6.2	4,000 12.6	2,200 212.5	2,000 29.7	3,500 12.2	0
1995	59,500	14,900	25.0	44,600	12,000 63.1	2,800 2.8	0 0.0	3,000 30.8	2,500 9.9	3,000 5.3	4,000 11.3	8,000 210.0	6,000 27.9	3,500 11.1	0
1996	61,000	18,300	30.0	42,700	12,000 59.4	2,500 2.1	0 0.0	3,000 29.9	2,500 9.1	3,000 4.4	4,000 10.1	8,000 207.6	4,200 26.6	3,500 10.0	0
1997	62,500	21,900	35.0	40,600	10,000 56.3	2,500 1.3	0 0.0	3,000 28.9	2,500 8.3	3,000 3.4	4,000 8.9	8,000 205.1	4,100 25.3	3,500 9.0	0
1998	64,100	25,600	40.0	38,500	8,000 53.9	2,500 0.5	0 0.0	3,000 28.0	2,500 7.5	3,000 2.5	4,000 7.6	8,000 202.7	4,000 24.1	3,500 7.9	0
1999	65,700	29,600	45.0	36,100	8,000 51.4	0 0.0	0 0.0	3,000 27.1	2,500 6.8	3,000 1.6	4,000 6.4	8,000 200.2	4,100 22.8	3,500 6.8	0
2000	67,300	33,700	50.0	33,600	6,000 49.6	0 0.0	0 0.0	3,000 26.2	2,500 6.0	3,000 0.7	4,000 5.2	8,000 197.7	3,600 21.7	3,500 5.7	0
2001	68,000	34,000	50.0	34,000	6,000 47.7	0 0.0	0 0.0	3,000 25.2	2,500 5.2	0 0.0	4,000 3.9	8,000 195.3	6,000 19.9	3,500 4.6	0
2002	68,700	34,400	50.0	34,300	6,000 45.9	0 0.0	0 0.0	3,000 24.3	2,500 4.5	0 0.0	4,000 2.7	8,000 192.8	6,000 18.0	3,500 3.6	1,300
2003	69,400	34,700	50.0	34,700	6,000 44.0	0 0.0	0 0.0	3,000 23.4	2,500 3.7	0 0.0	4,000 1.5	8,000 190.3	6,000 16.2	3,500 2.5	1,700
2004	70,100	35,100	50.0	35,000	6,000 42.2	0 0.0	0 0.0	3,000 22.5	2,500 2.9	0 0.0	4,000 0.3	8,000 187.9	6,000 14.3	3,500 1.4	2,000

Year	Waste Generation Rate	Waste Quantity Recycled	Recycle Rate	Disposal Rate	Puente var.	Spadra var.	BKK 10,000 (1990)	Azusa 3,000 (1990)	Scholl 2,500 (1990)	Bradley 3,000 (1990)	Lopez 4,000 (1990)	Sunshine 8,000 (1990)	Chiquita 6,000 (1991)	Catlabasas 3,500 (1991)	Waste Mgmt. Shortfall
2005	70,800	35,400	50.0	35,400	6,000 40.3	0 0.0	0 0.0	3,000 21.5	2,500 2.2	0 0.0	0 0.0	8,000 185.4	6,000 12.5	3,500 0.3	6,400
2006	71,500	35,800	50.0	35,700	6,000 38.5	0 0.0	0 0.0	3,000 20.6	2,500 1.4	0 0.0	0 0.0	8,000 182.9	6,000 10.6	0 0.0	10,200
2007	72,200	36,100	50.0	36,100	6,000 36.6	0 0.0	0 0.0	3,000 19.7	2,500 6.6*	0 0.0	0 0.0	8,000 180.5	6,000 8.8	0 0.0	10,600
2008	72,900	36,500	50.0	36,400	6,000 34.8	0 0.0	0 0.0	3,000 18.8	2,500 5.8	0 0.0	0 0.0	8,000 178.0	6,000 6.9	0 0.0	10,900
2009	73,600	36,800	50.0	36,800	6,000 32.9	0 0.0	0 0.0	3,000 17.8	2,500 5.1	0 0.0	0 0.0	8,000 175.6	6,000 5.1	0 0.0	11,300
2010	74,300	37,200	50.0	37,100	6,000 31.1	0 0.0	0 0.0	3,000 20.5*	2,500 4.3	0 0.0	0 0.0	8,000 173.1	6,000 3.2	0 0.0	11,600
2011	75,000	37,500	50.0	37,500	6,000 29.2	0 0.0	0 0.0	3,000 19.6	2,500 3.5	0 0.0	0 0.0	8,000 170.6	6,000 1.4	0 0.0	12,000
2012	75,800	37,900	50.0	37,900	6,000 27.4	0 0.0	0 0.0	3,000 18.7	2,500 2.8	0 0.0	0 0.0	8,000 168.2	0 0.0	0 0.0	18,400
2013	76,600	38,300	50.0	38,300	6,000 25.5	0 0.0	0 0.0	3,000 17.7	2,500 2.0	0 0.0	0 0.0	8,000 165.7	0 0.0	0 0.0	18,800

EFFECT OF
INTEGRATED WASTE MANAGEMENT SYSTEM
ON TIME-TO-CRISIS ANALYSIS

Expected daily tonnage, 6 day average (tpd-6)
Remaining Landfill Capacity at Year's End, Million Tons

Year	Waste Generation Rate	Waste Quantity Recycled	Recycle Rate	Disposal Rate	Puente var.	Spadra var.	BKK 10,000 (1990)	Azusa 3,000 (1991)	Scholl 2,500 (1990)	Bradley 3,000 (1991)	Lopez 4,000 (1990)	Sunshine 8,000 (1990)	Chiquita 6,000 (1991)	Calabasas 3,500 (1991)	Integrated System Capacity	Waste Mgmt. Shortfall
1990	52,600	5,300	10.0	47,300	12,000 11.6	3,000 7.4	10,000 15.4	2,200 35.4	2,500 13.7	2,800 9.9	4,000 2.5	6,000 1.3	2,000 2.2	2,800 16.5	0	0
1991	53,900	7,000	13.0	46,900	12,000 7.9	3,000 6.5	10,000 12.3	2,900 34.5	2,500 12.9	3,000 9.0	4,000 1.3	0 0.0	6,000 0.4	3,500 15.4	0	0
1992	55,200	8,800	16.0	46,400	12,000 4.2	3,000 5.6	10,000 9.2	3,000 33.6	2,500 12.2	3,000 8.1	4,000 0.1	0 0.0	0 0.0	3,500 14.3	5,400	0
1993	56,600	10,800	19.0	45,800	0 0.0	3,000 4.6	10,000 6.2	3,000 32.7	2,500 11.4	0 8.1	0 0.0	0 0.0	0 0.0	3,500 13.3	23,800	0
1994	58,000	12,800	22.0	45,200	0 0.0	3,000 3.7	10,000 3.1	3,000 31.7	2,500 10.6	0 8.1	0 0.0	0 0.0	0 0.0	3,500 12.2	23,200	0
1995	59,500	14,900	25.0	44,600	0 0.0	2,800 2.8	0 0.0	3,000 30.8	2,500 9.9	0 8.1	0 0.0	0 0.0	0 0.0	3,500 11.1	32,800	0
1996	61,000	18,300	30.0	42,700	0 0.0	2,500 2.1	0 0.0	3,000 29.9	2,500 9.1	0 8.1	0 0.0	0 0.0	0 0.0	3,500 10.0	31,200	0
1997	62,500	21,900	35.0	40,600	0 0.0	2,500 1.3	0 0.0	3,000 29.0	2,500 8.3	0 8.1	0 0.0	0 0.0	0 0.0	3,500 9.0	29,100	0
1998	64,100	25,600	40.0	38,500	0 0.0	2,500 0.5	0 0.0	3,000 28.0	2,500 7.5	0 8.1	0 0.0	0 0.0	0 0.0	3,500 7.9	27,000	0
1999	65,700	29,600	45.0	36,100	0 0.0	0 0.0	0 0.0	3,000 27.1	2,500 6.8	0 8.1	0 0.0	0 0.0	0 0.0	3,500 6.8	27,100	0
2000	67,300	33,700	50.0	33,600	0 0.0	0 0.0	0 0.0	3,000 26.2	2,500 6.0	0 8.1	0 0.0	0 0.0	0 0.0	3,500 5.7	24,600	0
2001	68,000	34,000	50.0	34,000	0 0.0	0 0.0	0 0.0	3,000 25.3	2,500 5.2	0 8.1	0 0.0	0 0.0	0 0.0	3,500 4.6	25,000	0
2002	68,700	34,400	50.0	34,300	0 0.0	0 0.0	0 0.0	3,000 24.3	2,500 4.5	0 8.1	0 0.0	0 0.0	0 0.0	3,500 3.6	25,300	0
2003	69,400	34,700	50.0	34,700	0 0.0	0 0.0	0 0.0	3,000 23.4	2,500 3.7	0 8.1	0 0.0	0 0.0	0 0.0	3,500 2.5	25,700	0
2004	70,100	35,100	50.0	35,000	0 0.0	0 0.0	0 0.0	3,000 22.5	2,500 2.9	0 8.1	0 0.0	0 0.0	0 0.0	3,500 1.4	26,000	0

Year	Waste Generation Rate	Waste Quantity Recycled	Recycle Rate	Disposal Rate	Puente var.	Spadra var.	BKK 10,000 (1990)	Azusa 3,000 (1991)	Scholl 2,500 (1990)	Bradley 3,000 (1991)	Lopez 4,000 (1990)	Sunshine 8,000 (1990)	Chiquita 6,000 (1991)	Catlabasas 3,500 (1991)	Integrated System Capacity	Waste Mgmt. Shortfall
2005	70,800	35,400	50.0	35,400	0 0.0	0 0.0	0 0.0	3,000 21.6	2,500 2.2	0 8.1	0 0.0	0 0.0	0 0.0	3,500 0.3	26,400	0
2006	71,500	35,800	50.0	35,700	0 0.0	0 0.0	0 0.0	3,000 20.6	2,500 1.4	0 8.1	0 0.0	0 0.0	0 0.0	0 0.0	30,200	0
2007	72,200	36,100	50.0	36,100	0 0.0	0 0.0	0 0.0	3,000 19.7	2,500 0.6	0 8.1	0 0.0	0 0.0	0 0.0	0 0.0	30,600	0
2008	72,900	36,500	50.0	36,400	0 0.0	0 0.0	0 0.0	3,000 18.8	0 0.0	0 8.1	0 0.0	0 0.0	0 0.0	0 0.0	33,400	0
2009	73,600	36,800	50.0	36,800	0 0.0	0 0.0	0 0.0	3,000 17.9	0 0.0	0 8.1	0 0.0	0 0.0	0 0.0	0 0.0	33,800	0
2010	74,300	37,200	50.0	37,100	0 0.0	0 0.0	0 0.0	0 17.9	0 0.0	0 8.1	0 0.0	0 0.0	0 0.0	0 0.0	37,100	0
2011	75,000	37,500	50.0	37,500	0 0.0	0 0.0	0 0.0	0 17.9	0 0.0	0 8.1	0 0.0	0 0.0	0 0.0	0 0.0	37,500	0
2012	75,800	37,900	50.0	37,900	0 0.0	0 0.0	0 0.0	0 17.9	0 0.0	0 8.1	0 0.0	0 0.0	0 0.0	0 0.0	37,900	0
2013	76,600	38,300	50.0	38,300	0 0.0	0 0.0	0 0.0	0 17.9	0 0.0	0 8.1	0 0.0	0 0.0	0 0.0	0 0.0	38,300	0

APPENDIX C
MARKET ANALYSIS

MARKETS FOR RECYCLABLES

INTRODUCTION

Purpose - This section has been developed to:

- o Characterize and assess the market potential for absorbing those materials that could be recovered from the Los Angeles County wasteshed.
- o To identify the materials for which short term saturation of markets could occur.
- o To identify those materials for which expanded market development efforts are recommended and to suggest possible direction for such efforts.

These assessments are undertaken to help determine the viability of various recovery efforts which might be undertaken as mitigations to reduce the volumes of materials requiring disposal in the landfills under consideration in this Environmental Impact Report.

Material Types - Markets are assessed for the following materials:

- Aluminum, including used beverage containers (UBC), irony aluminum, and heavy castings.
- Glass, including container and plate
- Tin-plated Steel Cans
- Plastics, including PET, HDPE, and others
- Tires
- Green Waste, including grass, leaves, shrub and tree trimmings.
- Woodwaste, including lumber, pallets, furniture, etc.
- Paper, including newspaper, corrugated containers, mixed, and high grades.
- Ferrous Metal
- Concrete & Asphalt

Textiles: Markets will not be assessed for textile wastes which comprise approximately 2.2% of the total waste stream. Although there are two existing markets for wiping cloth material and used clothing, there is no experience of recovery of these materials from mixed waste streams. Generation of this material in the household is too minimal and sporadic to include in source-separated curbside collection programs. Households should be encouraged to give used clothing to community organizations such as Goodwill Industries, The Salvation Army, etc. These groups, in turn, will reuse what they can and sell the unusables into the existing markets. After Material Recovery Facilities are in operation at landfill sites, the recoverability of received textile wastes can be evaluated

when the quality and condition of the material can be examined.

Food Waste: Food waste, comprising approximately 4.4% of the total waste stream could, technically, be incorporated into composting programs. However, there is no current experience with separate collection of mixed food wastes and, as a component of mixed waste, it is too contaminated to use without incurring serious technical and cost problems.

Waste Composition & Quantities - Various composition studies for waste substreams (i.e. residential, commercial/industrial, construction/demolition) were reviewed, with particular attention to those in southern California. Those considered most timely and reflective of Los Angeles County wastestreams were:

- o the 1988 composition data for residential waste developed by the City of Los Angeles. This data was also used by CH2MHill in its recycling study for the City of Los Angeles. (See Chart 1, below)

- o the 1988 composition analyses for non-residential waste performed by SCS Engineers at the Commerce Waste-to-Energy and Puente Hills Landfill sites (See Chart 2, below), as modified by the composition data contained in the document entitled "Solid Waste Management Status and Disposal Options in Los Angeles County."⁴

For overall waste quantity generated, the 1988 figure of 45,000 tons per day (6-day week), or 14,040,000 tons per year, commonly used by the Sanitary Districts will be used, along with the general division of 1/3 residential, 1/3 commercial/industrial, and 1/3 construction/demolition.

CHART 1

PERCENTAGE BY WEIGHT & ANNUAL TONNAGE OF SELECTED MATERIALS FROM THE RESIDENTIAL WASTE STREAM - LOS ANGELES COUNTY

<u>Material Type</u>	<u>Percent</u>	<u>Tons per Year</u>
Newspaper	5.7	266,760
Other Paper Mixed	28.0	1,310,400
Glass	6.0	280,800
Aluminum	0.5	23,400
Ferrous(Tin Cans)	2.7	126,360
Green Waste	35.6	1,666,080
Plastics	4.0	187,200

CHART 2

PERCENTAGE BY WEIGHT & ANNUAL TONNAGE RANGES OF SELECTED MATERIALS FROM THE COMMERCIAL/INDUSTRIAL & CONSTRUCTION/DEMOLITION WASTE STREAMS - LOS ANGELES COUNTY

<u>Material Type</u>	<u>Percent</u>	<u>Tons/Year</u>
Corrugated (OCC)	7.0	655,000
Other Paper Mixed	8.8	824,000
Ferrous Metal	13.3	1,241,000
Non-ferrous	0.8	74,000
Glass	3.5	328,000
Woodwaste	28.8	2,696,000
Green Waste	2.4	225,000
Plastics	8.5	795,000
Asphalt/Concrete	5.0	468,000
Tires	1.4	131,000

It is recognized, of course that it is not possible to recover 100% of any material in the waste stream. At the same time, sampling limitations, changing economic conditions, and changing consumption patterns will impact the accuracy and stability of composition analyses. However, the figures above are sufficient to make reasonable assessments of current and near-term (5-year) market capacities.

Discussion Format - Each of market assessments for the materials discussed in this section will include a:

- o Commodity Overview. A brief market history and general specifications.

- o Market Outlook. An assessment for the current and near-term capacities of the markets to absorb the maximum tonnages projected.

- o Local End Users List. For the most part, these will be companies that actually convert the material to new products (eg. paper mills, metal mills & foundries). For some, such as the polymers and glass, where major beneficiation is a pre-condition to end use, the beneficiators are listed. "Local" is defined as any domestic user who periodically or regularly uses material generated in Los Angeles County.

To begin with, it is helpful to define that segment of the secondary materials industry with which we are primarily concerned.

There are three levels of secondary materials generation and the terminology developed in the metals industry is most

useful in describing them.

I - Home Scrap - this refers to waste material generated in the production of the raw material itself. Examples are scrap steel generated in a steel-making mill, plastic scrap generated where the plastic is made, etc.

II - Prompt Industrial Scrap - this refers to waste material generated in the manufacture of products utilizing the referenced raw material. Examples include steel scrap generated in auto assembly plants, machine tool manufacturing; paper scrap generated by paper converters such as box makers, stationary manufacturers; glass scrap generated by bottle manufacturers, etc.

III - Post Consumer Scrap - this refers to waste material generated, largely as a result of outlived usefulness of the product as determined by the commercial or personal consumer.

Generally speaking, within certain technological constraints for some materials, these observations can be made:

1. The number of unit generators increases from I to III.

2. The amount of recyclable waste generated at each point decreases from I to III.

3. The level of contamination increases from I to III and the percent of waste generated that is economically recoverable decreases from I to III.

Varying somewhat from industry to industry, most recovery in I is obviously, in house; most in II (where activities I&II are not combined at a single site) is accomplished by the private sector "recycling industry" (eg. scrap metal dealers, waste paper packing plants, plastic regrinders, etc.); recovery in III is the segment most open to expansion and is essentially the subject of this section.

The primary sources of the additional material under consideration here are commercial, industrial and residential consumers and the secondary sources are the various agencies involved in the collection and aggregation of these materials.

DATA SOURCES AND ASSUMPTIONS

Market data in this section is derived from EMS, interviews with various industry sources, and review of various trade and government agency publications, including "Resource Recycling," "Biocycle," "Waste Age," "Packaging Digest," "Scrap Processing and Recycling," "American Metals Markets,"

"Annual Statistics" of the American Paper Institute, the U.S. Department of Commerce Commodity Yearbook, various reports of the California Waste Management Board and Department of Conservation, and various newspaper and magazine articles. In addition, every attempt was made to make composition and quantitative data used in this section compatible with LACSD publications and the CH2MHill Recycling Report for the City of Los Angeles.

MATERIAL SPECIFIC MARKET ASSESSMENTS

Following is a material by material market assessment for the recyclables specified above.

ALUMINUM

Commodity Overview

A light-weight metal, aluminum comprises less than 0.2% of the solid waste stream. It exists in the waste stream in roughly three marketable forms.

1. Used Beverage Containers (UBC's) - Most common and readily identifiable by consumers, the aluminum beverage can is widely recycled (an estimated 57% return rate in California as reported by the Department of Conservation (DOC) because of a strong scrap value enhanced by DOC redemption value, ease of handling, and a well-developed industry recycling infrastructure in place.

UBC's, when collected, are commonly screened over magnets for ferrous separation, then compacted by shredding, briquetting, or baling to maximize transportation payloads.

The most common contaminant is moisture and scrap value will generally be downgraded when moisture content exceeds 0.5% by weight. Trapped moisture, if excessive, can create explosive conditions in the remelt furnace. Other common contaminants include non-UBC metallics, combustibles, and dirt with allowances in the 1-2.5% range. For full UBC specifications, see Attachment A.

2. Irony Aluminum - This category is characterized by a variety of products combining extruded or cast aluminum bodies with ferrous connecting components (most commonly rivets). Lawn and pool furniture, pots and pans with handles are common examples. Although it is possible to upgrade these products by removing the ferrous material, it is usually labor intensive and rarely cost effective for intermediate processors.

3. Heavy Aluminum Castings - This category is more likely to be found in commercial and industrial sources. Common examples are engines, trailer bodies, airplane parts,

etc.

Market Outlook

Aluminum demand, globally, is high, particularly in the UBC and transportation markets. Domestic consumption was up 4.9% in 1988 and scrap exports rose 28.3% in the same period¹. Relatively little new virgin metal capacity is coming on line through 1992, and the high cost of new capacity will keep scrap demand high.

Within acceptable levels of quality, there does not appear to be any limit on the industry's ability or interest in buying all the UBC's generated. The State's goal, as mandated by AB 2020, of 65%, rising to 80% recovery is added pressure on the industry. Current demand for UBC scrap is strong although swings in demand are to be expected over time. However, even the low points in the scrap value will likely provide ample public encouragement to maintain the return flow.

Given the tremendous energy savings (95%) in using scrap versus virgin aluminum, and the value of the metal itself, although prices may vary from time to time, all available information suggests that any grade of aluminum scrap will be salable to commercial scrap metal dealers at any time and in just about any quantity recoverable from the waste stream.

Local End Users

For UBC: Alcoa Recycling Company
American National Can Corp.
BARMET Aluminum Corp.
Container Recovery Corp. (Anheuser-Busch Co.)
Coors' Golden Recycling
Kaiser Aluminum and Chemical Co.

Halaco
Liston
Thakar (formerly Vulcan)

For other aluminum grades: Most of the major metal scrap dealers listed in the Yellow Pages will be ready outlets.

GLASS

Commodity Overview

Glass makes up about 4% of the total waste stream. It comprises about 6% of the residential stream, 3.5% from commercial sources, and probably less than 1% of construction/demolition wastes.

Glass is made essentially from silica and soda ash and, although silica is plentiful, soda ash can be in short supply. Technically, glass, once made, can be remelted and recycled into new glass. Recyclable glass ready for the oven is called cullet. Advantages in the use of cullet over raw materials include:

a. Energy savings. Manufacturer estimates vary in a range from 9-27 percent as reported by EPA. Ten to fifteen percent savings is stated by EPA².

b. Reduced generation of air pollutants generated by the conversion of raw materials. Sufficient use of cullet may preclude substantial investment in pollution control systems.

c. Reduced wear and tear on refractory walls requiring less frequent downtime and reduced replacement costs.

Historically, cullet used was largely limited to home scrap and demand beyond that was sensitive to soda ash cost and availability. As such, demand for post-consumer cullet was very limited and priced so low that proximity to the glass plant was required for cost effectiveness. Cullet prices did not keep up with inflation, making collection and processing increasing difficult to sustain.

Glass is found in the MSW stream in several major forms.

1. Containers - The California bottle bill (AB 2020) changed the market picture substantially for glass containers in two ways. First, it established a redemption value in excess of the existing scrap value and called for a 65% recovery rate thus giving substantial impetus to the industry to accept more cullet and enhancing the value to the generator (consumer). Second, by threatening a "processing fee" to subsidize cost effective collection and handling, the scrap price was raised significantly above its historically flat low.

Note: Although the bottle bill deals only with beer and carbonated soft drink containers (with wine coolers added subsequently), the economic enhancements impact all container glass.

Container glass essentially comes in three major colors; i.e. flint (clear), green, and amber (brown). Although a moderate market exists for a three-color mix, the safer open-ended market is for color sorted flint, green, and amber. Flint cullet may not exceed 2% of green-amber, and the green or amber may not exceed 10% flint. The most serious contaminant of container cullet is ceramic and there is no level of tolerance for its presence. Entire truckloads of glass containers have been rejected upon

visual sighting of ceramic shards in the load. Non-container glass, including plate, windshield, mirrors, TV tubes, etc. are also considered serious contaminants and are not tolerated. Metal or plastic caps and rings are acceptable as they are easily removed during cullet beneficiation processes. Paper labels are burned off in the furnace and present no problems. More precise industry specifications are noted in Attachment A.

2. Plate and windshield - this category of glass is less commonly recovered. Circo Glass, a California-based cullet processor, has developed markets for this category, particularly in fiberglass manufacturing.

There are a number of potential secondary markets for crushed glass as an aggregate material. "Glasphalt," a glass/asphalt blend for paving, and a slurry seal product are prime examples. However, these are very low value uses, in the range of \$1-3 per ton and are more attractive in parts of the country where container glass manufacturing is not conveniently located.

Market Outlook

Currently, in addition to bottle bill pressures and revenue enhancements, there is a shortage of soda ash which is having an upward effect on scrap prices as plants search for increased cullet supplies. Nevertheless, the historically low, flat pricing for cullet suggests that the ongoing health of glass collection and delivery systems will depend heavily on continued external pressures as those generated by the bottle bill.

California has substantial container glass-making capacity in place (eight plants in the LA area) with large wine and food-packaging industries to sustain it. According to an industry group, the industry will be able to absorb cullet equal to 90% of its output. (Although it is technically possible to use a 100% cullet charge, most plant managers feel that a practical maximum is closer to 90% in order to maintain quality control). Increasing public pressure against plastic containers could enhance glass market share. However, it is important to note that increased demand for glass containers will not, in itself, increase cullet demand at viable prices without the pressures noted above. Nonetheless, so long as the State program is in force, all the container glass recovered in residential and/or commercial collections (maximally estimated at 1,900 tpd) could be readily absorbed into existing markets.

Local End Users

Most of the glass manufacturers in the state have organized into the California Glass Recycling Corporation (CGRC).

Since post-consumer glass containers must be processed into cullet (crushed and cleaned), a process known as beneficiation, such beneficiation facilities act as the end users' front door. Those located in the Los Angeles area are:

Socal, Huntington Park
Ball-Incon, El Monte
Owens-Brockway, Vernon

TIN-PLATED STEEL CANS

Commodity Overview

Tin-plated steel cans, used primarily for food packaging, represent the major ferrous component of the residential waste stream and may be significant in those commercial and institutional establishments with food service. All told, they comprise about 1.5% of the total waste stream.

For many years, the market for these cans was dependent primarily on the value of the tin which could be recovered. Recovered tin represents the only domestic source for this valuable metal. The international tin cartel had supported a price of about \$15 per pound and the can stock yielded about 12 lbs. of tin per ton. With the bankruptcy of the cartel, the free market price has been in the \$3-6+ range per pound of tin, currently near the top end of that range. At the same time, can technology reduced the tin coating to 5-6 lbs. per ton. This combination, therefore, required an acceptable market for the detinned steel to justify the economics of detinning.

Market Outlook

In southern California, the most common market for the detinned steel has been for use in the leaching of copper from low grade ores in Arizona mines. This market is secure so long as there is strong demand for copper, a condition existing for the last few years with little indication of significant softening.

In addition, with the increasing strength of ferrous scrap markets and, particularly, demand from new electric furnace mini mills, significant backup markets are developing for the detinned steel. Prices for tin can stock have risen by almost 70% in the past year. There does not appear to be any volume of recoverable tin can stock that cannot be absorbed by existing markets. Given a maximum of about 126,000 tons per year from residential sources, Proler has indicated that its Arizona facility could accommodate half of that at its current capacity and could alone absorb the remainder by increasing capacity.

Local End Users

Proler International (MRI Corp)
MacLeod Metals

PLASTICS

Commodity Overview

The percentage of plastics in the total waste stream has been growing steadily, standing now at about 10%. The term "plastics" covers a wide range of chemical polymers each of which has its own special characteristics. Plastic products may be composed of one or more of these polymers. Plastics can be divided into two basic categories; thermoplastics and thermosets. Only the thermoplastics can be remelted and recycled into new products. Although the thermosets cannot be remelted, they can be ground up and used as filler material in a number of product applications.

Plastics constitute a growing portion of the waste stream and the thermoplastics constitute the bulk of plastics in the waste stream. More than 70% of these are either high or low density polyethylenes (HDPE or LDPE). Polyethylene terephthalate (PET) dominates the soft drink market, and many of these containers are fitted with a HDPE base cup. Polystyrene and polyurethane are major plastics in packaging and fast food services. Polyvinyl chloride (PVC) is common in packaging and construction products.

Historically, plastic recycling has been essentially limited to home and prompt industrial scrap, where polymer identification is clear and contamination is minimal. The solid waste crisis in general has brought increased pressure on the plastics industry to expand recycling into the post-consumer waste stream. This crisis has been exacerbated by the many environmental insults of plastic litter and the use of chlorofluorocarbons in the production of foam products.

Market Outlook

As indicated, traditional recycling of thermoplastic resins requires polymer identification, separation, cleaning, and regrinding. Accordingly, recent market development has been largely limited to PET beverage containers (triggered by bottle bills in several states), and readily identifiable milk jugs (HDPE) from residential waste streams. Although the major plastic container market is held by HDPE and PET, there has been a recent entry of Oriented Polypropylene (OPP). From commercial/industrial waste streams, the most commonly recovered plastics are polyethylene film and sheet and Polyvinyl Chloride (PVC).

PET carbonated soft drink containers are covered by the

California bottle bill and will be redeemed by all State-certified recycling centers in any volume generated, and backed by the plastics industry so long as the bottle bill, or its equivalent, remains in force.

PET, which cannot be recycled into beverage containers at this time because of its capacity to absorb some of the liquid it contains and the potential contamination therefrom (eg. if an empty container is used to store gasoline temporarily), is commonly recycled into fiber fill for life jackets and other products. Proctor & Gamble broke new ground when it used 100% recycled PET to bottle its Spic and Span Pine Cleaner. There is a company in the east that has used PET regrind to make egg cartons, a potential application that may be worth pursuing in California. Further down the line, Goodyear has recently begun experimenting with a process that would return PET to its original monomers. This process, if successful, would allow for the recycling of PET containers into new beverage containers, thereby closing a recycling loop much like that currently enjoyed by aluminum cans.

An export market for various post-consumer grades is developing in the Pacific Rim countries. "The hottest export grades today are ...PVC and polyethylene..."³ In addition to traditional "regrind", or processed forms, markets are developing for unprocessed baled, color-sorted or mixed color material. Although there seems to be a minimal export market for mixed plastics, the material is more commonly sorted by polymer before shipping. In the early stages of such market development, there is a mutual "feeling out" by both buyers and sellers as to stable supplies of consistent quality for the buyer and stable demand for the seller. With a number of companies expanding operations on the West Coast, market opportunities will probably exist to accommodate sorted polymer efforts in Los Angeles County.

Alternatively, there is a potential market for mixed plastic waste, using technologies refined in Europe. Systems developed in Belgium and Germany can manufacture a variety of extruded products by remelting and extruding a polyethylene matrix in which other polymers in the mix act as filler material. Thicker items are more desirable end products for these systems. Examples include car stops, fencing, park benches, road barriers, "railroad ties" for landscaping and slope containment. There is a company in Iowa using a modified Belgian system with some success. If the public agencies in LA County evaluated their product uses with an eye to those which could be manufactured by one of these processes, it might be possible to develop a "closed-loop" market for all the recoverable waste plastic generated.

Local End Users

Following is a partial listing of buyers of scrap plastic, most of which may not be end users.

Acri-Tech Plastics, Ontario
Al's Plastics, Vernon
Coast Polymers, Downey
CR&R, Stanton
Eureka Plastics, Vernon
Independent Paper Stock, Los Angeles
Joes's Plastic, Vernon
Muehlstein & Co., Los Angeles
Plastic Recovery Systems, Santa Fe Springs
Rastra
Talco Plastics, Whittier
Recycle Plastics II, Scotts Valley
U.S Recycling, Los Angeles

TIRES

Commodity Overview

The "rubber" portion of modern tires is made of various polymers and may even include a percentage of natural rubber. In addition to the rubber polymers, there are a variety of other materials present, depending on the "belting." Examples include steel, nylon, and fibreglass.

The primary existing market for used tires is the retread market. A "retreadable" tire must have good sidewalls. The infrastructure for the identification and collection of retreadable tires is fairly well established in the commercial sector. It is assumed that most tires entering the waste stream are no longer retreadable.

Alternatively, market potential for disposed tires falls into two principal categories, i.e. chipped or whole, as a fuel source or crumbed, as a product raw material.

Market Outlook

a. Fuel - there are a limited number of existing markets in California for used tire fuel. There is only one existing dedicated "tire-to-energy" system in northern California (Westley) that burns whole tires. In most cases, however, the tires are chipped and used as a supplementary fuel. This market, for the generator, is commonly one of negative price, i.e., the generator pays to have the tires removed. The current arrangement at Puente Hills, where a contractor is chipping a portion of the waste tire stream and has plans to remove a portion of the chipped tires, presumably to a fuel user, is a case in point. Tire fuel cannot be moved long distances cost effectively. With the

air quality restrictions on combustion emissions in the Los Angeles Basin, it is unlikely that this market will be available for any significant proportion of the tire waste stream.

b. Crumb - this potential market represents a much more positive scenario for waste tire use in Los Angeles. Crumb rubber has a high volume market potential as a 25% component of asphalt rubber for use in road paving and repair or as a raw material for a wide variety of product applications.

The technical desirability of using asphalt rubber has been evaluated positively by a number of federal, state, and local agencies. A 20% life-cycle cost savings has been postulated by the industry.

In discussions with County and City of Los Angeles street maintenance staff, a major obstacle to its use is the increased up-front cost (two to three times) over asphalt alone. There are also concerns about the special equipment required for mixing and applying the rubber asphalt blend, particularly the costs related thereto.

Given the principal deterrent to its use is related to cost, this obstacle could be eliminated or mitigated by:

1. allocating part or all of the disposal fee for tires to the production and blending of the crumb.

2. assessing a "disposal" fee on all new tires purchased in the County to cover the cost of production.

Under these conditions, with the production and blending of the crumb "subsidized", the up-front cost of asphalt rubber would be less than asphalt alone, thus yielding an equivalent or better product at a lower (subsidized) cost. At the same time, all the tires would be diverted from the landfills. Moreover, if option 2, above, were chosen, a tipping fee for used tires could be eliminated which would, in turn, probably reduce the number of tires illegally littering county roadsides. On the other hand, option 1 could be implemented without any change in current procedures, although the current rate of about 30 cents per tire would probably have to be raised to about one dollar.

The higher value use of the crumb, as a raw material in the manufacture of products, needs development. These products include those using rubber polymers alone or in combination with plastic polymers. See discussion in the plastics section for "closed loop" market possibilities.

There is also the possibility of developing export markets for crumb rubber and these should be investigated as well.

It is highly unlikely that an annual estimated production of 40,000 tons of crumb in the Los Angeles area (derived from 131,000 tons of used tires) could be accommodated without developing either the asphalt blend or raw material markets beforehand.

Local End Users

At the present time, Atlos Rubber in Los Angeles is the major marketer of crumb rubber in the area. However, there is no known facility in the area that is presently crumbing rubber from used tires.

GREEN WASTE

Commodity Overview

With a full year growing season in Los Angeles County, green waste constitutes approximately 13.5% of the total waste stream. Green waste is made up essentially of grass, leaves, brush, and tree prunings. This material is easily shredded and suitable for aerobic digestion (composting). The finished compost product is uneven (batch specific) in its NPK (nitrogen, phosphorous, potassium) content and would probably require chemical additives to bring the product up to acceptable fertilizer standards. However, even without these additives, the product would be most useful as a soil amendment to provide valuable structure, aeration, and moisture-holding qualities. An additional advantage of such large-scale soil building uses is that advanced curing and screening of the composted material is unnecessary.

Market Outlook

Successful efforts to market the material as a commercial product could result in taking up a share of the existing market, displacing other products, without increasing net diversion from disposal.

Given the large volume of composted material that could be generated in the County (approximately 3,000 tons per day, based on the premise that cured compost loses about 50% of the weight of the original material), the most valuable markets (uses) to be developed would be large, institutional ones, eg., hillside stabilization, freeway berm cover material, upgrading of marginal soil areas, erosion prevention applications, etc. This approach received strong support from the Los Angeles County Board of Supervisors, which unanimously approved the following actions on April 25, 1989.

"1. Strongly supported the green waste research and development efforts of the County Sanitation Districts;

2. Instructed County departments (particularly Public Works, Arboreta and Botanic Gardens, Agricultural Commissioner/Weights and Measures and Internal Services) to assist the Sanitation Districts in their efforts and to carefully research the diversion of green waste produced by County departments to green waste programs rather than landfilling the material;

3. Requested the appropriate Federal, State and local agencies to rapidly process requests to use composted and shredded green waste for landfill cover and other beneficial purposes;

4. Requested Federal, State and local agencies (particularly Federal and State Parks, local cities, Caltrans, state universities and colleges), utility firms, golf courses and cemeteries to divert their green waste away from landfills to composted and shredded green waste programs; and

5. Requested local cities and private disposal firms in the County to review the possible implementation of residential green waste collection programs."

Public agencies that should be approached in this regard include:

Federal

Army Corps of Engineers
Forest Service
National Park Service
Soil Conservation Service

State

Caltrans
State Parks
University of California Cooperative Extension

County

Beaches and Harbors
Flood Control
Forester
Parks and Recreation
Public Works Department

Cities and Others

Department of Water & Power
Metro Water District
Parks and Recreation
Santa Monica Conservancy
Tree People

In regard to potential institutional users, the Landlab

Project currently being carried out by the Department of Landscape Architecture of the California State Polytechnic University, Pomona, in cooperation with the LACSD, is a developmental effort that may bear fruit in the near future.

As an interim or alternative use, an experimental program to use shredded green waste, without composting, as daily cover at one of its landfills, is being carried out by the LACSD. If this use is acceptable to the appropriate oversight agencies, all of the green waste that could be received in segregated loads would be accommodated.

WOODWASTE

Commodity Overview

Woodwaste, comprising about 29% of the total waste stream, is commonly distinguished from bush and tree waste in that it is limited to processed wood products such as furniture, pallets, and lumber in various forms. It constitutes a substantial portion of the non-residential waste streams.

Although much of woodwaste is relatively clean, significant contaminants include metal, tar, creosote, and other chemical treatments. Excessive gypsum dust may also be a problem, particularly in demolition woodwaste. The presence of these contaminants at unacceptable levels (in the 3-4% range by weight) will preclude use as a fuel.

For use as a fuel, while each combustion system has its own distinct fuel parameters, woodwaste is commonly shredded to a particular size, often with plus and minus limits (the fines screened out of the shredded wood are readily marketable as soil amendment). The material must also be relatively free of non wood contaminants. One buyer, for example, has a limit of 4% non-combustibles and 3% tramp combustibles by weight.

Market Outlook

The biomass fuel market is an increasingly popular market for uncontaminated woodwaste in California. The number of dedicated biomass fuel combustion systems is growing, especially in the Central Valley and northern California. Industry sources indicate that nearly two million additional tons will be required annually beginning next year for projects in process now. There are a few facilities closer to Los Angeles that could accommodate a small portion of the 2,696,000 tons estimated annual woodwaste generation in the county; principally, the Colmac Energy project in Imperial County and the facility in Brawley. However, increased woodwaste recovery in neighboring counties may preclude these limited market outlets.

Pricing of woodwaste fuel is commonly based upon the btu value of a bone-dry ton. Downward adjustments in price are made for moisture content. Woodwaste, being much dryer, is the preferred fuel over green waste. Historically, the relative low pricing for this fuel (eg. \$29 per bone-dry ton, delivered) did not generally allow for very long distance shipping without significant avoided costs or some form of tipping fee to enhance economic viability. However, increasing demand in the north (estimated at two million new tons for 1990) has benefitted pricing, especially for potentially large volume generators. It now appears that large volumes of woodwaste can be transported to San Joaquin Valley locations cost-effectively. With careful attention to securing purchase contracts up front, a substantial portion of the projected maximum supply could be accommodated.

As an interim measure, and to accommodate woodwaste that cannot be sold into the fuel market, it will be useful to consider a backup use of shredded material as a mulch or, alternatively, a more finely shredded product that could be incorporated with the shredded green waste.

PAPER

Commodity Overview

A great variety of paper grades, collectively, constitute the largest material commodity (nearly 1/3) of the waste stream. Most paper fiber is processed from wood pulp although paper can be made from a great variety of cellulosic fibers.

Waste paper grades can be grouped into three general categories; pulp substitutes, de-inking, and bulk grades.

Pulp Substitutes: As the name implies, this material can be introduced, as is, into the pulper and refers to unprinted, clean, segregated grades generated in mills, by converters (eg. those who make boxes, stationary, etc. from rolls of paper), and printers. Most of this material is already recycled by the industry.

De-ink Grades: This material, segregated by grade, is de-inked, cleaned, and often bleached before the fibers are reintroduced into the paper-making process. The best of these grades are the manifold grades (pre-consumer) generated by converters and printers. Post consumer grades require careful sorting as acceptable levels of contamination rest in the 1-2% range. Industry informants estimate that approximately 75% of the manifold grades are currently recycled by the commercial sector. The post

consumer sorted grades, especially de-ink old newspapers (ONP) and the sorted ledger grades (office paper) have potential for significant volume growth for recovery.

Bulk Grades: These grades, basically Board Mill News, OCC, and mixed paper are commonly screened for inappropriate paper grades and unacceptable levels of non-paper materials, and used without deinking in a variety of product applications, including the inner layers of boxboard, wallboard, and linerboard. These grades have the greatest potential for volume diversion from the existing waste stream because, together, they constitute about 22% of the total waste stream and permit relatively high levels of contamination as compared with other paper grades.

Mills using waste paper purchase various grades on the basis of product need, fiber yield, fiber strength, and brightness. The particular mix will vary from mill to mill, as well as within any given mill over time. This dynamic requires constant attention by those wishing to sell various waste paper grades on a sustained basis. Moreover, paper fibers are susceptible to degradation and each recycling reduces the percentage of usable fiber recovered. Therefore, as greater and greater percentages of recycled fiber appear in waste paper, the yield of usable fiber per ton of waste paper will diminish. Since the bottom line for the purchasing mill is usable fiber yield, value per ton will probably be impacted. It is the relatively high proportion of virgin fiber in American waste paper that makes it such a valuable commodity in the export markets.

General Market Overview

The waste paper industry is well established in the Los Angeles area both in terms of using mills and a wide variety of packers and brokers. Packers collect/buy paper from smaller generators, sort as necessary, bale, and ship to using mills. Brokers function primarily to coordinate large orders from mills, often requiring multiple sources. Many large packers also operate as brokers.

Los Angeles waste paper feeds local mills, domestic mills along the west coast, and, except for special exceptions, no further east than Arizona. There is also a lively export market, most of which is in the Pacific Rim (primarily Taiwan, South Korea, and Japan), with a less consistent market in Mexico.

Unlike recycling in other commodities, paper mills are commonly designed either for virgin pulp or recycled fiber since the front ends of the two systems are quite different and siting factors would differ substantially.

Historically, many of the larger paper manufacturers are

components of vertically integrated wood products companies which own vast tracts of timber. Therefore, even though a recycled fiber mill is often more cost effective than a wood pulp mill, the pressure to utilize an asset in which the company is already invested (i.e. timber) often is the overriding decision factor.

Pulp mills are generally restricted to accepting only the "pulp substitute" waste paper grades and those that do so are usually motivated by cost factors. Mills using waste paper as furnish (i.e., raw material feedstock), on the other hand, can always use pulp as conditions dictate. As an example, the recently integrated Gaylord facility in Antioch, California (merging the former Louisiana Pacific and Crown Zellerbach facilities) reduced its demand for OCC by 8,000-10,000 tons per month, substituting pulp.

Pricing of waste paper is primarily a function of demand. A dictum of the market is that waste paper is bought, not sold. In California, waste paper can be viewed as a global commodity. Domestic mills are always competing with each other and with foreign mills. Since most waste paper, particularly the bulk grades common in the waste stream, go into the production of packaging and building materials, demand is highly sensitive to macroeconomic conditions. A number of other factors affecting waste paper demand and pricing are:

1. The relative value of the dollar against the currency of importing countries. As with any exportable commodity, a weaker dollar will enhance export.
2. Freight rates and container availability. In the export market, relatively low value waste paper must compete with higher value goods for available containers. If higher freight rates are not absorbed by the buyer, the seller's bottom line is negatively impacted.
3. The relative price and availability of virgin pulp.
4. Governmental import and/or currency transfer restrictions.
5. Level of production relative to maintenance of furnish inventories.
6. Production stoppages as a result of labor problems, mechanical breakdowns, or political unrest.
7. Changeover of production techniques or product manufactured.

Price changes for specific grades at any time may be subject to a snowball effect starting from a single microeconomic

factor. A labor strike at one mill may suddenly throw an excess supply into the hopper, touching off a quick downward spiral in price as sellers scramble to unload inventory. Each successive drop raises the stakes of maintaining stock, thereby encouraging more panic selling. Conversely, a sudden excess demand requiring prompt satisfaction, may begin an upward spiral in price impacting the entire market spectrum.

OLD NEWSPAPERS (ONP)

Commodity Overview

Old newspapers are marketed in two basic grades, i.e. de-ink and board mill (see PS-88 specifications, numbers 6 and 8, in Attachment A). The de-ink grade is used essentially to make recycled newsprint and the board mill grade is used primarily as a component of boxboard medium and a variety of other packaging and construction products. Newsprint and boxboard mills account for about 77% of ONP use in the U.S.

Market Outlook

In 1988, approximately 45,000 tons per month (tpm) of ONP moved from Los Angeles into local mills and export, about 20,000 tpm of this to domestic mills. (It should be noted that the 45,000 tpm of ONP includes ONP being generated in other southland counties). With domestic mills operating at near capacity during this period, domestic consumption is not expected to increase substantially during the near term. This is especially true in view of the fact that over 90% of new newsprint production capacity in North America coming on line in the next five years is designed for virgin pulp.

There is, however, a growing export market which, in 1988, increased 25.1% over the previous year⁵, accounting for the fact that ONP collections increased at over twice the rate of domestic increases in consumption.

There is a condition that is currently developing with definite short term and potential long term impacts on ONP markets. Traditionally, ONP demand and pricing have been cyclical. As demand dropped, prices dropped. Eventually, generating sources were no longer motivated to save, collect, and sell. Consequently, supply diminished. As demand began to exceed supply, prices would begin to rise and the cycle began anew. A new factor has recently been intruded into this scenario. There is a burgeoning collection of ONP motivated by waste diversion rather than material demand. As such, the collectors are guided as much (or more) by the avoided cost of disposal as by the price being offered for ONP. For these collectors, even a negative price (i.e. paying a mill to take the paper) may be justified when compared to a higher disposal cost.

Moreover, much of the ONP being thus collected, mostly in residential curbside collection programs, is "new tonnage," that is ONP not previously entering the commercial collection stream. Unless this "new tonnage", which for Los Angeles County alone is estimated at some 20,000 tpm, comes forward in careful conjunction with specific increases in mill demand, the entire ONP market can become so price-depressed, that commercial handling of this grade will cease to be viable, leaving additional thousands of tons of ONP which may or may not be collected in curbside programs. In such a case, the net effect would be an even greater burden of ONP entering the waste stream at a time when absolute (i.e. not sensitive to price) demand is insufficient.

Historically, de-ink is priced at about \$10-15 per ton above board mill quality. It is one of the ironies of the industry that, as prices (i.e. demand) drop, the demand for quality increases. Thus, a secondary effect of flooding the market with supply is that the cost of "cleaning" the ONP collected will increase at the same time that revenues decrease or disappear.

Domestically, developing demand falls into three categories. The first is encouraging the increased use of recycled newsprint by publishers. With the LA Times already using 75% recycled newsprint, this area of development would not be expected to result in substantial increases in demand. However, other papers in the County and the southland should be encouraged to consider its use.

The second is to encourage major packagers in the County to use boxes with recycled medium. The growth of demand for this product would enhance the market for mixed paper as well.

The third is to support the use of properly manufactured cellulose insulation and to remove any unwarranted regulatory barriers to its use, should they exist. At present, EPA estimates that loose and spray-on products constitute only 3% of the insulation market, indicating much room for growth. For insulation board, EPA notes that just over one million tons of waste fibers per year were consumed nationally. Again this latter product would benefit mixed paper and OCC demand as well.

OLD CORRUGATED CONTAINERS (OCC)

Commodity Overview

Old corrugated containers are used primarily in the manufacture of components for new corrugated containers; either linerboard or corrugating medium. It is also used in a variety of other packaging and construction products. Specifications call for a relatively clean product (see PS-

88 specification in Attachment A) although this varies somewhat with end use and the cleaning capability of the using mill (eg. Japanese mills generally do not have substantial cleaning systems and require a much cleaner "pack" than other Asian or U.S. users). The most common contaminants are plastic wrap and packing materials. Waxed OCC is generally unacceptable as well.

There is a well-established infrastructure for the collection of OCC from commercial generators accounting for the high rate of recovery, estimated by some at 70% for the Los Angeles Basin, well above the national rate of 45%. However, various waste composition analyses in the area of landfill residuals indicate that the actual recovery rate may be somewhere in the 50-60% range.

Market Outlook

Demand for OCC is largely a function of demand for new corrugated containers which, in turn, is highly sensitive to production of goods requiring such packaging. Hence, the market is sensitive to macroeconomic conditions.

In 1988, a banner year for paper production saw approximately 950,000 tons of OCC (approximately 80,000 tpm) move to end users out of the Los Angeles Basin, with a little more than half going to domestic mills and most of the exported OCC going to the Pacific Rim.

Although there has been some softening of OCC prices in recent months, it remains within the normal of price variation for this grade. So far, unlike the situation with ONP, the supply side of OCC has remained largely within a commercial structure. As waste diversion pressures increase, however, there exists the danger of generating supply without regard to demand. The potential addition of 33-50,000 tpm to existing markets could have a devastating price effect if this release is not timed carefully with increased demand.

As with ONP, increased demand for OCC will most likely come from abroad, particularly the Pacific Rim, although there is some indication that there will be a growing presence of Asian paper manufacturers siting mills in the United States, thereby stimulating domestic demand for OCC. However, much of the heralded market growth potential of the Peoples Republic of China must be viewed less optimistically in view of recent events there.

MIXED PAPER

Commodity Overview

Because this grade is defined in such a way as to encompass

all types of paper, with unsuitable outthrows such as carbon paper limited to 10% (see PS-88 specifications in Attachment A), the potential volume in the county is substantial; on the order of 160,000 tpm over existing levels of recovery.

Mixed paper has limited product use, principally as a filler medium in boxboard and wall board, and in roofing felts (a product that has been steadily losing market share). Even in these uses, it is primarily a component along with other more specific grades of waste paper.

Recently, Wastech, Inc. in Canada has pelletized mixed paper for use as a fuel.

Market Outlook

With domestic mills in the Los Angeles area operating at over 90% capacity in 1988, only some 9,000 tpm of mixed paper was consumed. It is clear, therefore, that any significant growth of market demand for mixed paper will come from abroad.

Mixed paper, as would be expected, is the lowest value waste paper grade. Countries, where end product quality standards may be compromised by the attractive pricing of mixed paper, are likely candidates for growth in demand for this grade. China has been touted as a prime market for mixed paper and several "ventures" have been publicized recently. However, political and economic uncertainties now raise serious questions about this market. Others will probably expand at a much more measured pace. Total exports of mixed paper in 1988, although registering a 19.9% increase over 1987, rose only 146,000 tons for the year or a little over 12,000 tpm.

As a possible back-up market, pelletized mixed paper has potential if the processing and transporting to potential fuel users in central and northern California can be made cost-effective.

HIGH GRADES

Commodity Overview

The great majority of high grade waste papers are generated as essentially pre-consumer (i.e. prompt industrial) scrap by converters and printers and are currently being recovered to a high degree by the commercial waste paper sector. The major "post-consumer" exception is computer print-out which is highly valued and, therefore, recovered from most large generators.

The other principal post-consumer high grades are the sorted ledgers known more commonly to the public as "office paper." A sub-grade of this group is known as Super Mix, which is

limited to no more than 10% groundwood content (see PS-88 specifications in Attachment A).

Market Outlook

The market demand for almost all high grades, and its relatively limited availability, will assure ready absorption of any additional tonnage generated in the Los Angeles Basin for the foreseeable future.

Domestic End Users for Waste Paper

B.J. Fibers, Santa Ana
CCA/Smurfit, Vernon
Domtar, San Leandro
Ft. Howard, Muskogee, OK
Gaylord, Antioch
Golden State, Pomona
Inland Container, Ontario
Kimberly-Clark, Fullerton
L.A. Paperbox, Los Angeles
Newark Pacific, Los Angeles
Pabco, Vernon
Paper-Pak, La Verne
Simpson, Pomona
Sonoco, City of Industry
Specialty Papers, Santa Fe Springs
Stone Container, Snow Flake, AZ
U.S. Gypsum, South Gate
Willamette, Port Hueneme

FERROUS METAL

Commodity Overview

Ferrous post-consumer scrap accounts for about 5% of the total waste stream. Iron and steel are the most abundant materials from which metal products are fabricated and metal structures are constructed. There are a wide variety of grades of ferrous scrap and recovery, particularly of post-consumer scrap, is becoming increasingly complicated and costly by virtue of the ever-growing array of alloys and combinations with other metallic and non-metallic components.

Major components common in the waste stream, in addition to the can stock noted separately in this section, include junked autos, engines, white goods (eg. refrigerators, washers, dryers), wire products, pipe, various building materials, bicycle frames, pots and pans, tools, etc.

Market Outlook

Although ferrous scrap has had a long, spotted history in

the United States, current trends are mostly encouraging. The U.S. steel industry has rebounded well in recent years, the result of restructuring and plant modernization. Of particular importance to the scrap markets has been the advent and growth of electric furnace mini-mills capable of using 100% scrap infeed. By 1988, these mills had captured 36.5% of market share and do well in competition with foreign imports. Domestic demand was so strong, that exports dropped off by 5.5%. Therefore, we are not experiencing an unmet offshore demand. This combination of strong domestic and export demand are expected to keep ferrous scrap sales strong with continued high prices. As an example, the American Metal Market composite price for No. 1 heavy melt, recorded its highest-ever yearly average.

Industry sources in the Los Angeles Basin indicate that any additional recovery of ferrous scrap, estimated at about one million short tons annually, can be readily absorbed into existing markets.

ASPHALT/CONCRETE

Commodity Overview

Asphalt, a blend of oils and aggregates is used mostly for roadbed construction. Concrete, in addition to road use, is a major construction material for structures. In the latter use, concrete is often contaminated with steel rebar, which can be removed magnetically when the concrete is crushed for reuse as aggregate.

Market Outlook

It is estimated that relatively little of the asphalt/concrete generated in Los Angeles County ends up at landfills, most of it being recycled, increasingly, by commercial operators. The residual material, about 3.3% of the total waste stream, is largely diverted at the landfill and used on site in a variety of construction applications.

It is anticipated that the volume of asphalt/concrete materials arriving at the landfills will continue to diminish and will continue to be utilized on site. Therefore, it may be projected that only a relatively insignificant amount of this material will find its way into landfill cells.

SUMMARY

In conclusion, market assessments for the recoverable materials fall into three general categories.

Category 1 materials have readily available markets and will be absorbed without problem (assuming that industry/use

specifications are met) at maximum levels of recovery from the waste stream. These materials are:

- Aluminum, all grades
- Asphalt/Concrete
- Ferrous metals
- Glass containers, color-sorted to flint, amber/green
- Green Waste, if used as landfill cover
- High grade papers
- PET containers covered by AB2020
- Tin-plated steel cans
- Woodwaste, if finely ground to mix with green waste

Category 2 materials have existing markets, but require careful coordination of recovery efforts with specific demand, pricing, and/or development of cost-effective collection and transportation. These materials may also benefit from some level of new market development. These materials include:

- Corrugated Containers
- Glass containers, not color-sorted
- Green Waste, if composted
- Mixed Paper
- Newspaper
- Plastics, sorted or sortable
- Woodwaste, as a fuel
- Tires, as a fuel

Category 3 materials require market development as a precondition to recovery efforts. Such efforts will include market development for manufactured products made from these raw materials. These materials are:

- Plastics, mixed
- Tires, as a source of crumb rubber

A final note of caution for all commodity markets. Since most of these materials are used in the manufacturing of products sensitive to macroeconomic conditions, severe short term dislocations are always possible. At such times, for specified materials, landfilling, as a temporary expedient, may be the only viable alternative.

POTENTIAL LEGISLATIVE IMPACTS ON RECYCLING MARKETS

There is a high level of state and national activity taking place in the legislative arena with potential impact on recycling markets. These activities, though somewhat varied, generally support four categories of legislative action.

1. Legislating a percentage of the solid waste stream that is to be diverted from disposal by reduction and/or recycling.

These bills tend to establish percent diversions across the board without being material specific, although in some cases, home and prompt industrial scrap are not to be included in tallying diversion tonnages. The percentage of diversion is often stated as that to be achieved by a specified time, with escalating percentages in the longer term. In California, existing bills in the legislative hopper have percentage goals in the 25-50% range.

The potential exists for such legislation to push the supply side of recyclables ahead without regard to demand, thereby causing market disruptions, at least in the short term, until production capacity catches up with supply (if the right conditions exist). Nearly all of these bills contain safety clauses that permit non-attainment of the percentage goals if sufficient markets are not available or if it can be demonstrated that the attainment of the goals are technically or economically unfeasible. A substantial side benefit of this legislation will be an increased incentive to improve the data base of recycling activity.

2. Legislating economic incentives to support recycling efforts.

These bills will generate revenues from such sources as landfill disposal surcharges, special taxes or deposits on specific products (eg., tires, beverage containers), and general fund allocations. The funds are commonly used to support research and development, provide low-interest loans or grants for recycling operations, add value to the consumer product to encourage redemption, and offer tax credits for recycling business investment.

These activities can have substantial positive impact on enhancing collection, processing, and recycling of various materials and on new market development, if carefully administered. Additional funding is not always the best response to a problem. Moreover, the application of public funds (i.e., subsidy) must have clearly delineated and defensible goals that override the potential advantages that may accrue to public vs. private enterprises or to one segment of an industry vs. another.

3. Legislating procurement standards to ensure recycled content, reuse, and/or recyclability of various products.

These efforts, insofar as they mandate action, are largely limited to public agencies at the national, state, and local

levels. Nevertheless, these public agencies are major consumers and, as such, their impact (especially their collective impact) can be great on manufacturers. Moreover, the setting of reasonable standards for government procurement can provide a measure of confidence to commercial purchasing agents as well. A dedicated and consistent effort in this regard will tend to provide a clear signal to manufacturers and provide them with the needed long-term stability to make increased investments in research, development, and production that favor recycling and remanufacturing.

4. Legislating bans of particular materials or products from distribution or disposal.

One form of this legislation prohibits the sale, distribution, and use of specified material products within a given political jurisdiction. Recent examples include the banning of styrofoam packaging in fast food outlets, and the proposed banning of disposable diapers by one state. The viability and enforceability of this most authoritative use of public power is not yet sufficiently tested to evaluate impacts. If carefully applied in a timely fashion, with substantial consumer support and understanding, with a ready supply of acceptable alternative products, and a true delineation of benefits accruing from the ban, this activity can have very positive impacts on source reduction of waste and enhancing the recyclability/reusability of manufactured products.

In somewhat similar fashion, another form of this legislation is to ban particular materials from disposal (i.e., from refuse pickup or from landfills). Current examples include green waste, tires, "curbside recyclables," etc. Commonly, a date is set by which time the ban will be enforced. The intent is to provide public pressure to develop alternatives to disposal. This technique can have positive impact if appropriate alternative technologies exist, are economically feasible, and markets can absorb the recovered material. As with legislation type 1, above, this activity is supply pushed. Potential negative impacts, if improperly implemented, include severe market dislocations and aggravated littering conditions.

POTENTIAL IMPACTS OVER THE LONG TERM (TO THE YEAR 2013)

The market assessments made in this technical paper cover the near term, roughly 1989-94. As indicated, 1988 waste generation and composition data was used and straight-line projections of quantity and composition to 1994 are not expected to alter significantly the market assessments made. However, it is reasonable to assume that straight-line projections over the long term are not good indicators of future conditions. The future is rarely a straight

projection of the past since that projection cannot include new technologies, changing consumption patterns, or significant single episodes that alter basic living and demographic patterns. Nevertheless, it will be fruitful to consider some recent trendlines and to provide a basis for dealing with change as it occurs.

There are both positive and negative trendlines apparent today as impactors of waste generation and recycling and, on balance, it appears that the positive trends outweigh the negative ones for the next 20-30 years.

Positive Trendlines

The 1990's have been termed, "The Decade of the Environment," signalling increased international attention to global contamination of air, water, and land. In the United States, this pressure, combined with increased public motivation to maximally extend landfill life, will likely result in a sustained public mandate to reduce waste generation and to recycle as much as possible.

A parallel trend will be the increasing demand for modernization in the Third World. The pressure to provide for this absolute increase in demand for a wide variety of manufactured products coupled with the need to contain this growth within acceptable environmental parameters will tend to encourage increasing use of recyclable materials.

The above are macro-trends and are expected to continue into the early part of the twenty-first century.

On a more micro level, there is beginning an increased sensitivity to recyclability/disposal cost for manufactured products on the part of government and the manufacturers, themselves. This could translate into higher proportions of recovery for given materials or to increased removal of non-recyclables from the production stream.

Negative Trendlines

The most significant negative trend is the development of increasingly complex material combinations in a wide variety of products and packages, making recycling technically and/or economically unfeasible.

At the same time, there continues to be an increase in throwaway products, justified by convenience to the consumer or the economics of programmed obsolescence.

Both of these trends are in conflict with the last positive trend indicated above. It is not yet clear which direction will dominate.

Transition Requisites

In the face of changing waste streams, collection and process technologies, and commodity use demands, the waste manager wishing to maintain the highest level of recovery feasible should:

- o Institute a protocol for monitoring waste composition on a regular basis.
- o Maintain ongoing research and development into more efficient recovery techniques and labor productivity.
- o Support market development efforts, domestically and internationally.

APPENDIX D
MATERIALS RECOVERY FACILITIES

APPENDIX D

MATERIALS RECOVERY FACILITIES

The establishment of a "Materials Recovery Facility" (MRF) at a waste transfer station represents an excellent option for significantly increasing the volume of diversion from disposal over existing levels. A MRF is a solid waste processing facility that has the sole purpose of recovering recyclable materials such as cardboard, mixed paper, and plastics from the waste stream. Solid waste processing facilities in the United States represent a range of materials recovery technology. These range from transfer stations manually recovering only cardboard to a completely mechanized proprietary process which claims to be able to recover more than 90 percent of the waste stream. A brief discussion of these facilities and the respective processes utilized is presented here.

The level of contamination of mixed residential waste is such that efficient recovery of materials at a MRF is substantially limited. Therefore, this section will concentrate on the two major waste substreams; commercial/industrial and construction/demolition, which together constitute roughly two-thirds of the total waste stream. These streams are collected and delivered to waste facilities in both compacted and loose loads by a variety of commercial and private vehicles.

Materials Recovery at Solid Waste Transfer Stations

The primary function of a transfer facility is to consolidate waste from a variety of collection/delivery vehicles into maximum payload trailers for delivery to a disposal facility. Efficient and timely off-loading and reloading, space limitations, and the constant movement of vehicles at existing facilities, however, make recovery operations difficult and often interruptible. Nonetheless, transfer station operators have been motivated to recover recyclables when haul costs and landfill tipping fees are to be avoided. At such sites, the materials most commonly recovered are old corrugated containers (OCC) and bulky metal scrap. The OCC is usually baled on site and metal scrap is commonly stored and moved to scrap dealers in roll-off containers. At the design stage for new transfer facilities, it is possible to provide for a more elaborate and ongoing recovery system.

Materials Recovery Facilities

While MRF designs vary somewhat in system approach, some generalized patterns emerge as process steps. These can be categorized as primary, secondary, and tertiary. As a final step, the potential for the MRF to act as a processing center for commingled recyclables collected in residential curbside collection programs can be considered.

Primary Steps. This initial series of activities include the receipt of the mixed material through the initial sorting out of recoverables by material type. Figure 1 is a simplified diagram of a MRF to illustrate the primary steps.

Step 1. Influencing precollection storage and routing decisions. This effort will be especially helpful in front-end loader collections which commonly include apartment complexes and a variety of retail and small office businesses. By careful routing, where economically feasible, wet garbage contamination can be minimized for office or retail merchandising wastes. Requesting or requiring the bagging of wet waste is another possibility. These steps will enhance recovery efforts at the MRF.

Step 2. Traffic management at the MRF. Many trucks entering the MRF will carry essentially one type of material. By monitoring at the gate, trucks can be directed to the proper tipping area for mixed material or reserved areas for special material, such as commingled recyclables or green waste. Moreover, traffic control into the tipping area will permit control of operations and promote efficient and timely off-loading.

Step 3. Depositing mixed material on a tipping floor. The size and configuration of the tipping floor must be such as to accommodate the anticipated traffic without undue delay. In those cases where most of the material is delivered to the facility in a concentrated time span, provision may be made for some stockpiling of mixed waste for processing later in the day.

Step 4. Moving the mixed material from the tipping floor to the sorting conveyor(s) or directly to storage points. At this stage the material is spread out on the floor, usually by bucket loaders, to allow for visual inspection. Heavy, bulky items such as white goods, tree stumps, and anything else too large for sorters to handle manually are removed and placed in appropriate

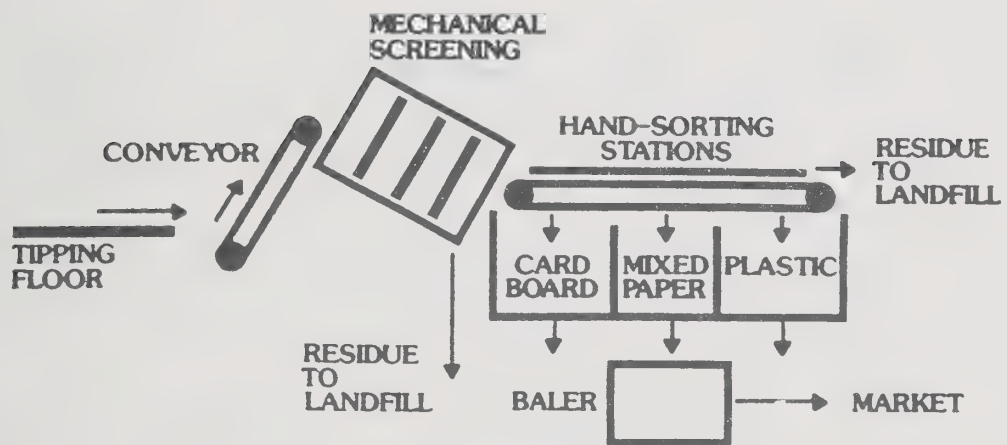


Figure 1 Schematic of a Commercial Waste Processing Line

storage areas. Any observable hazardous material is removed at this point. The remainder of the material is pushed onto an infeed conveyor.

Step 4A. The mixed material moves up the conveyor into a rotating trommel for removal of dirt, small particles or glass, ceramics, etc. The diameter of the trommel here should be quite large (about 8 feet) to avoid jamming or clogging by sheet plastic and large boxes. If a trommel is used, any attempt at glass container recovery should precede trommel entry.

Step 5. The screened material moves onto another conveyor to elevated manual sorting stations, to allow for gravity drop of sorted materials into holding bins below. Here, the layout in terms of length, number of lines, number and sorting duties of sorters, number of drop zones for material, size and configuration of storage will depend upon anticipated volume throughput and the number and kind of materials to be recovered. Most commonly, OCC, scrap metal, sheet plastic, PVC pipe, and mixed paper are recoverable in significant quantities.

Step 6. Sorted material is aggregated for removal to the disposal location. In case of a MRF connected to a transfer station, the conveyor carrying the residuals may simply continue into the transfer station disposal area, depositing the material on the disposal tipping floor.

Secondary Steps. This phase of MRF activity encompasses any secondary sorting, further decontaminating, additional processing, and preparation for shipment of all sorted material. Since this phase relates to specific materials largely recoverable from nonresidential waste streams, it will concentrate on OCC, ferrous scrap, mixed paper, and selected plastics. Green waste, wood waste, and tires are assumed to be directed to alternative areas for special treatment or addressed by recycling activities at the landfill.

Step 1. OCC will be dropped into a storage area adjacent to the infeed conveyor of a high-density (export grade) horizontal baler. This area may be a concrete floor, in which case the OCC will be pushed onto the baler conveyor by a bucket loader or some equivalent piece of equipment. Alternatively, the floor of the storage area can be a conveyor at right angles to the baler conveyor. Several plant designs include a parallel series of these right-angle conveyor bins to hold all the various materials to be baled. It will be

useful to design in at least one additional sorting point for the OCC before it enters the balers, so that any contaminating material (such as plastic sheet) missed by the initial sorters may be removed.

Step 2. Mixed paper can be handled in much the same way as OCC above. However, given the relatively high proportion of office-generated paper in this waste stream, it will probably be cost-effective to run the mix through a secondary sort for recovery of computer printout (CPO) and, possibly, assorted ledgers (white or colored office paper). In this case, the primary sorters will drop the mixed paper into a receiving hopper for a secondary sorting conveyor. The secondary sorters will drop to tertiary conveyors for the CPO and ledger grades. The residual mix would empty from the secondary conveyor into a holding bin.

Step 3. Ferrous scrap, subject to economic analysis related to grade and volume, will be stored in large, roll-off bins and sold as mixed scrap to a scrap yard for subsequent processing. Alternatively, the scrap can be sorted (minimally into heavy gauge and light gauge), cut as appropriate to 4-foot bundle size, and/or baled. If baling is economically feasible, a dedicated scrap baler is called for, since metal and paper balers have quite different characteristics.

Step 4. Depending on available markets, it may be possible to sort out all plastics and bale the mixed polymers without secondary sorting. Alternatively, polymers can be sorted into major categories, especially after industry polymer codes are placed on containers. Most of the plastic recovered from this waste stream will be sheet plastic (low density polyethylene), which can be baled mixed or upgraded by color sorting before baling.

Tertiary Steps. This phase includes the storage, loading, and shipping of sorted and processed materials.

Step 1. Protected, paved surface space for storage of baled paper and plastics is desirable. Sufficient space for one or more backup loads in each grade is appropriate. Bales are commonly stacked three-high in rows. Bales of ferrous scrap can be stored outdoors.

Step 2. Bales of paper or plastic are loaded onto flat-bed trailers or into closed vans/export containers or rail cars using forklift trucks. Therefore, both floor-level and loading dock space is required, with

special attention to adequate space related to volume and traffic control. Ferrous bales can be loaded into roll-off bins or onto flat-beds, as well as into rail gondolas.

Step 3. Any material stored and shipped in roll-off bins will be picked up by trucks for delivery.

Process Addendum. This item deals with process lines that could be added to the MRF to permit efficient handling of material collected in various residential curbside programs. The materials dealt with will include newspaper, glass and metal containers (aluminum and tin-plated steel cans), and PET and high-density polyethylene (HDPE) containers. Assuming that any specific material collected separately from the others, can be integrated at the point of postsorting storage, the process lines described will deal with newspaper and the remaining commingled.

Step 1. The newspaper will be received tied or in paper or plastic sacks. A short process conveyor line to remove string and sacks will be required before the newspaper is stored for baling. If the newspaper is collected along with other paper, such as junk mail, it will probably be integrated directly with the mixed paper residue and not upgraded.

Step 2. The commingled material will be deposited in a receiving hopper or on an adjacent floor area. As the material moves onto the initial elevated sorting conveyor(s), flint and green/amber glass will be hand-picked. Next, the material will pass through a trommel to screen out broken glass, dirt, and other fines. The material passing through the trommel will pass magnets dividing the stream into tin-plated cans on one side and an aluminum/plastic mix on the other. On the tin-plated side, any trapped aluminum will be removed manually and the tin cans will proceed to storage and baling. On the other side, sorters will pull PET and HDPE bottles and remove any extraneous material for disposal. The two plastic container streams will move to storage and baling, with a possible intermediate step for perforation to enhance bale compaction and integrity. The remaining aluminum stream will continue on into storage and baling.

APPENDIX E

REGULATORY REQUIREMENTS FOR
CLASS III SANITARY LANDFILLS AND
SANITATION DISTRICTS DESIGN CRITERIA

COMPARISON OF REGULATORY REQUIREMENTS FOR SANITARY LANDFILLS (CLASS III)
AND LOS ANGELES COUNTY SANITATION DISTRICTS DESIGN CRITERIA

CALIFORNIA CODE OF REGULATIONS, TITLE 23, SUBCHAPTER 15

<u>Reference</u>	<u>Regulatory Requirement</u>	<u>Sanitation Districts' Conceptual Design Criteria</u>
Site Location		
\$2530.c.	Wastes must be a minimum of 5 feet above the highest anticipated elevation of underlying groundwater.	Base landfill design on site geological and hydrogeological studies and review of regional hydrologic information. These studies will be used to characterize conditions at a proposed landfill site such as maximum groundwater elevation, permeability of site soils, local fault zones, and other data relevant to comprehensive landfill design.
\$2533.a.	Site characteristics must provide adequate separation between waste and waters of the state.	See response to requirements of \$2530.c. As part of the landfill design, include a liner system, surface water controls, subsurface barriers/extraction system, and a groundwater monitoring well network, as needed, to provide separation of waste and waters of the state.
\$2533.c.	The landfill must be designed, constructed, operated, and maintained to prevent inundation or washout from a 100-year flood.	Locate the proposed landfill sites outside of the 100-year flood zone.
\$2533.d.	The landfill must not be located on a known Holocene fault.	Based on geologic and hydrogeologic studies of the landfill site (see response to \$2530.c), do not locate the proposed landfill sites on known Holocene faults.
\$2533.e.	The landfill may be located within areas of potential rapid geologic change if containment structures are designed, constructed, and maintained to preclude failure.	Design and construct all containment structures to prevent failure taking into consideration relevant site specific geologic and hydrogeologic information (see response to \$2530.c).

Reference

Regulatory Requirement

Sanitation Districts' Conceptual Design Criteria

Surface Water Protection and Control

\$2533.b.1.	Soil characteristics, distance from waste to groundwater, and other factors must not allow impairment of beneficial uses of surface water or groundwater beneath or adjacent to the landfill.	See response to requirements of \$2530.c.
\$2533.c.	The landfill must be designed, constructed, operated, and maintained to prevent inundation or washout from floods with a 100-year return period.	Design and construct precipitation and drainage control structures such as debris basins and stormwater retention structures to control surface water runoff generated as a result of a 100-year storm.
\$2540.c.	If site characteristics are inadequate to prevent degradation of waters of the state, the landfill must have containment structures capable of such protection.	See response to requirements of \$2533.a.
\$2546.a.	The landfill must be designed and constructed to limit ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping during the 100-year, 24-hour precipitation, unless it can be shown that the integrity of containment features, precipitation and drainage control structures, and monitoring facilities will not be jeopardized if this requirement is not met.	Include elements in the design of the landfill that will function in the protection of proposed landfill facilities from the 100-year, 24-hour precipitation such as an inspection and maintenance program to ensure maintenance of adequate surface slopes and integrity of interim and final cover; diversion and drainage control structures to direct flow away from the landfill; debris basins; and stormwater retention structures.
\$2546.c.	Diversion and drainage facilities must be designed and constructed to accommodate the anticipated volume of precipitation and peak flows from surface runoff generated from the 100-yr, 24-hour precipitation.	As part of the landfill design, include drainage and diversion facilities to accommodate the volume of precipitation and peak flows from surface runoff resulting from the 100-year storm, 24-hour storm.
\$2546.d.	Collection and holding facilities associated with precipitation and drainage control systems will be emptied immediately following each storm, or otherwise managed to maintain the design capacity of the system.	As part of the facility operations plan, include management of the drainage control systems appropriate to maintain design capacity of the system.

<u>Reference</u>	<u>Regulatory Requirement</u>	<u>Sanitation Districts' Conceptual Design Criteria</u>
\$2546.e.	Surface and subsurface drainage from outside of the landfill must be diverted from the landfill.	As part of the landfill design and operations plan, include surface and subsurface drainage controls to divert drainage originating outside of the landfill boundary away from the landfill.
\$2546.f.	Cover materials shall be graded to divert precipitation from the landfill, to prevent ponding, and to resist erosion as a result of precipitation with the 100-yr, 24-hr precipitation.	Grade cover materials (daily cover, intermediate cover) at a minimum slope of 2% to prevent ponding and to limit erosion potential.
Liner		
\$2533.b.2.	Where site characteristics do not meet the requirements of \$2533.b.1., the landfill must have a single clay liner with a permeability of 1×10^{-6} cm/sec or less.	As part of the landfill design, include a liner system which meets or exceeds the required permeability of 1×10^{-6} cm/sec or less.
\$2542.a.	The liner must be designed and constructed to contain fluid, including waste and leachate.	Carry out a testing program on the liner system components to ensure that the liner is capable of containing liquids after exposure to waste and leachate.
\$2542.b.	If required, a clay liner must be a minimum 1 foot thick and be installed at a relative compaction of at least 90 percent.	As part of the design for the liner, include a clay liner with a minimum thickness of 1 foot and a permeability of less than 1×10^{-6} cm/sec. Install the liner in accordance with regulatory standards.
Leachate Collection and Removal System		
\$2543.a.	Leachate collection and removal systems are required for landfills which have a liner or which accept sewage or water treatment sludge.	As part of the landfill design, include a leachate collection and removal system.
\$2543.b.	If required, the leachate collection and removal system must be installed directly above the liner and must be designed, constructed, operated, and maintained to collect and remove twice the maximum anticipated daily volume of leachate generated from the landfill.	Locate the leachate collection and removal system above the liner system. The leachate control system will be designed with the capacity to remove twice the daily volume of leachate generated from the landfill.

Reference

Regulatory Requirement

Sanitation Districts' Conceptual Design Criteria

\$2543.c. Ensure that there is no buildup of hydraulic head on the liner. Maintain the depth of fluid in the collection sump at the minimum needed to ensure efficient pump operation.

\$2543.d. The leachate collection and removal system must be designed and operated to function without clogging. Testing must be conducted at least annually to ensure proper function.

\$2543.e. and f. If a liner is required, the leachate collection and removal system must be of the blanket-type or dendritic type.

\$2543.g. Collected leachate must be returned to the unit from which it was collected or discharged in a manner approved by the Regional Water Quality Control Board.

\$2546.b. The landfill must have a leachate collection and control system designed to collect and manage precipitation generated from the 100-yr, 24-hour precipitation that is not diverted by covers or drainage control systems.

Subsurface Barrier

\$2545.b.2. If required by the Regional Water Quality Control Board, cutoff walls must be a minimum of 2 feet thick for clay materials; a minimum of 40 mils thick for synthetic materials; and keyed a minimum of 5 feet into natural geologic material with a permeability of 1×10^{-6} cm/sec or less.

Design the leachate collection system to operate efficiently at low fluid levels.

Include in the design of the leachate collection and removal system a blanket gravel drain and collection piping system overlain with a layer of geotextile filter. Carry out a monitoring and inspection program in accordance with regulatory requirements to ensure that the system functions without clogging.

As part of the design, include a blanket-type leachate collection and removal system above the liner in the landfill canyon bottom.

As part of the leachate control system, include on-site treatment of leachate with discharge in accordance with methods approved by the Regional Water Quality Control Board.

As part of the landfill design, include a leachate collection and control system with the capacity to accommodate twice the maximum anticipated daily volume of leachate.

As part of the subsurface barrier system design, the slurry trench will be a minimum of 2 feet wide and will be keyed a minimum of 5 feet into the underlying bedrock.

<u>Reference</u>	<u>Regulatory Requirement</u>	<u>Sanitation Districts' Conceptual Design Criteria</u>
\$2545.b.5.	Cutoff walls must have fluid collection systems installed upgradient of the structure and must prevent the buildup of hydraulic head against the structure. Regular inspections of the system must be conducted and accumulated fluid must be removed.	As part of the subsurface barrier system, include a fluid collection system located upgradient of the subsurface cutoff walls. A series of upgradient and downgradient piezometers will be installed to evaluate the performance of the subsurface barrier and the extraction wells.
Groundwater Monitoring		
\$2551	The discharger must develop and implement a groundwater detection monitoring program. If necessary, the operator must be prepared to carry out a verification monitoring program and a corrective action program.	Develop a groundwater monitoring program designed to detect the presence of waste constituents above background concentrations.
\$2555.b.	Groundwater monitoring system must be designed and certified by a registered geologist or registered civil engineer and must consist of sufficient number of wells, installed at appropriate locations to yield groundwater samples that are representative of background groundwater quality and the quality of groundwater passing the points of compliance.	Comply with regulatory requirements related to groundwater monitoring system design and layout.
\$2555.c.	Groundwater monitoring wells must be constructed in a manner that maintains the integrity of the drill hole and prevents cross-contamination of saturated zones. Well construction procedures must be consistent with regulatory standards with respect to screened zone, annular space characteristics within the screened zone and above the screened zone, and well development standards.	Comply with regulatory requirements.
\$2555.d.	Groundwater monitoring wells must be logged during drilling under the supervision of a registered geologist and filed with the Department of Water Resources.	Comply with regulatory requirements.

ReferenceRegulatory RequirementSanitation Districts' Conceptual Design Criteria

- \$2555.e. The groundwater monitoring program must provide an accurate and reliable indication of groundwater quality.
- \$2555.f. and g. The groundwater monitoring program must include determination of the groundwater surface elevation and field parameters and must be capable of providing data necessary for updating water quality protection standards for indicator parameters and waste constituents to reflect changes in background water quality.
- \$2555.h. Approved statistical procedures must be used to determine whether water quality standards had been exceeded.

In the groundwater monitoring program, include standard procedures for sample collection, sample preservation and shipment, analytical procedures, and chain of custody control.

Comply with regulatory requirements related to field measurements for each sampling period.

Comply with regulatory requirements related to evaluation of groundwater sample analytical results.

Cover

- \$2544.a. Interim cover must be designed and constructed to minimize percolation of precipitation through waste.
- \$2546.f. Landfill must be graded to divert precipitation from the landfill, to prevent ponding of surface water over waste, and to resist erosion as a result of precipitation of the 100-year, 24-hour precipitation.
- \$2580.d. At least two permanent monuments must be installed at the landfill upon closure.
- \$2580.e. Vegetation selected for the closed landfill must require minimum irrigation and maintenance, and must not impair the integrity of containment structures including the final cover.

Grade the interim cover at a slope of 2%.

See response to requirements of § 2544.a. In addition, utilize large granular soil, as available, to prevent erosion.

Install two permanent monuments at the landfill upon closure.

The cover vegetation will consist of native vegetation which is allowed unrestricted growth, and additional landscaping comprised of ornamental species, as necessary. Landscaping will be performed using species requiring minimal irrigation upon maturity.

ReferenceRegulatory RequirementSanitation Districts' Conceptual Design Criteria

§2581.a.1.

A foundation layer of two feet minimum thickness must be provided for the final cover. The material for the foundation layer may be soil, contaminated soil, incinerator ash, or other waste materials, provided that such materials have appropriate engineering properties to be used for a foundation layer. The foundation layer must be compacted to maximum possible density.

Install foundation layer of suitable material at a minimum thickness of 2 feet.

§2581.a.2.

A layer of soil at one foot minimum thickness is required on top of the foundation layer. The soil layer may not contain waste or leachate and must attain a permeability of either 1×10^{-6} cm/sec or less, or equal to the permeability of the bottom liner system or underlying natural geologic materials, whichever is less.

Install a minimum 1 foot thick low permeability layer (maximum permeability of 1×10^{-6} cm/sec) overlying the foundation layer.

§2581.a.3.

A layer of one foot minimum thickness is required on top of the layer described in §2581.a.2. The rooting depth of any vegetation planted on the cover must not exceed the depth to the one foot (or greater) layer described in §2581.a.2.

Install an upper soil layer with a minimum thickness of one foot to serve as a vegetative rooting layer.

§2581.a.4.

The final cover must be designed and constructed to function with the minimum maintenance possible.

Design and construct the final cover to function with the minimum maintenance. Inspect final cover at regular intervals to ensure proper function.

§2581.b.1.

The landfill, upon closure, must be graded and maintained to prevent ponding and to provide slopes of at least 3%. Lesser slopes may be allowed if surface drainage is effectively diverted from covered wastes.

Grade all refuse fill slopes to prevent ponding at a minimum slope of 2% (consistent with existing LACSD landfill fill slopes).

§2581.b.2.

In a closed landfill, areas with slopes greater than 10 percent, surface drainage courses, and areas subject to erosion by water and wind must be designed and constructed to prevent such erosion.

Protect areas with slopes greater than 10 percent from erosion by means of vegetative cover. Line surface drainage courses with concrete or other suitable material.

CALIFORNIA CODE OF REGULATIONS, TITLE 14, DIVISION 7, CHAPTER 3

Disposal Site Operations

\$17676 Unloading of solid wastes must be confined to as small an area as practicable. Adequate control of wind blown materials must be provided.

Confine unloading area to maximum of about 300 feet in total length (2-150 foot areas or 1-300 foot area). Control litter by the daily application of cover material and the use of portable litter fences. Carry out additional inspection of the landfill and access areas on a regular basis.

\$17677 The refuse must be spread and compacted in layers not to exceed a depth of approximately two feet.

Compact refuse in layers not to exceed a depth of two feet.

\$17679 The slope of the final site face must not be steeper than a horizontal to vertical ratio of one and three quarters to one (1-3/4:1).

Grade the final landfill front faces at a 2:1 slope.

\$17682 Daily cover material must be compacted to a minimum thickness of 6 inches. (Note: \$17683, Performance Standards, may be used in lieu of \$17682).

Compact daily cover material to a minimum thickness of 6 inches.

\$17684 For intermediate cover, a compacted layer of at least 12 inches must be placed on surfaces of fill where no additional refuse will be deposited within 180 days.

Compact intermediate cover material to a minimum thickness of 12 inches.

\$17685 For final cover, a minimum 2 feet of compacted cover material must be placed over the entire surface of the final lift. This must be completed within 15 months of placement of the final lift.

For final cover, place 2 feet of compacted cover material over the entire surface of the final lift. Complete final cover installation within 15 months following placement of final lift.

Gas Monitoring and Control (proposed by CWMB)

\$17705.1 The concentration of methane gas must not exceed 1.25% by volume in air within on-site structures and must not exceed 5 % by volume in air at the facility property boundary and trace gases must be controlled to prevent acute and chronic exposure to toxic and/or carcinogenic compounds.

Design the gas detection system to sound an alarm and notify workers when methane is present above allowable levels. Conduct monitoring for other toxic and/or carcinogenic compounds as requested by the Local Enforcement Agency or the South Coast Air Quality Monitoring District.

ReferenceRegulatory RequirementSanitation Districts' Conceptual Design Criteria

\$17705.3	A gas monitoring network must be installed to ensure detection of the presence of landfill gas migrating beyond landfill property boundary and also into on-site structures.	Design the gas monitoring and control system to detect the escape of landfill gas at the perimeter of the landfill site and at on-site structures.
\$17705.5.a.	Perimeter gas monitoring wells must be installed around the waste deposit perimeter but not within refuse. Modifications to this provision can be implemented with the approval of the LEA and the CWMB.	Do not install perimeter wells within the refuse.
\$17705.5.b.	The lateral spacing between adjacent monitoring wells must not exceed 1000 feet. Determination of actual spacing must be based on site specific characteristics.	Install gas monitoring wells at a typical lateral distance of 250 feet. The lateral distance between gas monitoring wells will not exceed 1000 feet.
\$17705.5.c.	The depth of the wellbore must equal the depth of refuse as measured within 1000 feet of the monitoring point. The number of monitoring probes within each wellbore must be based on site specific characteristics and shall include: (a) a shallow probe located 5 to 10 feet below the surface; (b) an intermediate probe installed at or near half the wellbore depth; and (c) a deep probe at or near the depth of the wellbore. All probes must be installed above the permanent low seasonal water table, above and below perched water, and above bedrock.	Develop a gas monitoring system taking into consideration site specific characteristics. Details related to system design such as wellbore depth and number of probes per wellbore will comply with regulatory requirements.
\$17705.7	Periodic or continuous monitoring systems must be used to monitor on-site structures adjacent to and on top of the waste deposit area including buildings, subsurface vaults, utilities, or any other areas where potential gas buildup would be of concern.	Install periodic/continuous gas monitoring systems to monitor on-site structures adjacent to and on top of the waste deposit area.
\$17705.9	All monitoring probes and site structures must be monitored for methane and specified trace gases as required by the LEA or the CWMB.	See response to requirements of \$17705.3.
\$17705.11	At a minimum, landfill gas monitoring must be carried out quarterly.	Conduct a quarterly landfill gas monitoring program.

ReferenceRegulatory RequirementSanitation Districts' Conceptual Design Criteria

S17705.13

Results of gas monitoring must be submitted to the LEA and the CWMB 90 days following completion of sampling.

Submit quarterly landfill gas monitoring reports to the applicable regulatory agencies.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT, RULE 1150.1

c1. The landfill gas control system must be approved by the Executive Officer, maintained in good working order, and designed to be of sufficient capacity to draw landfill gas toward the gas collection devices without overdraw.

Design and install a landfill gas management system with sufficient capacity to draw landfill gas to the gas collection system without overdraw.

c2. The landfill gas control system must be installed according to a design and in a manner approved by the Executive Officer and must be extended as necessary to prevent off site migration of landfill gas even with the expansion of landfill boundaries.

Design landfill gas management system to detect and prevent offsite migration.

c3. Sampling probes must be installed at the perimeter of the landfill in accordance with an approved installation plan as a means of evaluating off site migration potential.

Design gas monitoring probes to enable evaluation of off site migration of landfill gas. Prepare monitoring probe installation plan and submit for review and approval to appropriate regulatory agencies.

c4. - Air samples must be collected and analyzed to determine the concentrations of total organic compounds and any toxic air contaminants. The sampling interval must be specified by the Executive Officer and the sampling plan and the methods of analysis must be approved by the Executive Officer.

Prepare landfill gas sampling plan and submit for review and approval to the appropriate regulatory agencies. As part of the sampling plan, include analytical laboratory analysis for total organic compounds and other relevant toxic air contaminants. Prepare and submit a quarterly report summarizing the results of laboratory analysis of the appropriate landfill gas samples.

- A quarterly report must be submitted that summarizes analytical results for an integrated air sample collected from the surface of the landfill, landfill gas collected by the gas control system, landfill gas from perimeter sampling probes, and ambient air samples collected at the perimeter of the landfill.

<u>Reference</u>	<u>Regulatory Requirement</u>	<u>Sanitation Districts' Conceptual Design Criteria</u>
c5.	The concentration of total organic compounds in the integrated air sample from the surface of the landfill shall not exceed 50 ppm.	Comply with regulatory analytical requirements.
c6.	The concentration of organic compounds must not exceed 500 ppm measured as methane at any point on the landfill surface.	Comply with regulatory analytical requirements.
c7.	Landfill gas must be disposed of by means of an approved method with maximum possible efficiency (e.g. combustion, gas treatment and subsequent sale, sale and processing offsite).	Identify and develop methods for landfill gas disposal appropriate for the needs and conditions associated with the selected landfill site. Include combustion and energy recovery as disposal method alternatives.
c8.	The efficiency of the combustion equipment or the gas treating facility must be evaluated as the system begins operation and annually thereafter.	Prepare a program to evaluate gas combustion or gas treating efficiency. Carry out the program on an annual basis.
c9.	Approved mitigation measures must be carried out during installation of the landfill gas control system to prevent public nuisance.	Comply with regulatory requirements.
C10.	An approved plan must be in place before recommencing operations at a previously closed landfill or commencing operations at a newly established landfill.	Comply with regulatory requirements.
c11.	Must submit compliance plan including means to meet the compliance schedule, monitoring probe installation procedures, sampling and test methods, planned mitigation measures.	Prepare and submit compliance plan for review and approval by the appropriate regulatory agencies.

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